

REV.

LERA

LESLIE E. ROBERTSON ASSOCIATES, RLLP
CONSULTING STRUCTURAL ENGINEERS

P

DRAWING NO.

DRAFT

DESIGN

CHECK

WTC

DRAWING BOOK



D

Book D.

Box 6

SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

STRUCTURAL & CIVIL ENGINEERS

PROJECT	TITLE	DATE
THE WORLD TRADE CENTER	DRAWING BULK C - CAPPING UNIT	10/ 6/72

VISIONS

INTED
5/18/73

WTCT-43-LERA

D-AB0-	0	5/18/73
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D-AB0-D

REVISIONS

*5/26/69**9/15/71*General Notes

Drawing Book D contains a summary of information required to assemble and install damping units and contains information relating to the bolting of floor trusses to the truss seats. Drawings in this book refer both to Tower A and to Tower B unless otherwise noted.

Damping units:

- 1) Damping units and damping unit extensions will be provided by others under contracts 221.00, 224.00 & 238.00. Type 'A' damping units shall be assembled to damping unit extensions under contract 230.00 in accordance with the provisions of shop drawings prepared under contract 221.00 and damping units and damping unit assemblies shall be installed within the buildings under contract 230.00.
- 2) Bolts and washers will be supplied under contract 234.00 and shall be installed under contract 230.00.
- 3) Type 'A' damping units shall be assembled, complete with fully torqued connecting bolts, prior to installation within the buildings.
- 4) Damping units and damping unit assemblies may not be installed prior to the placing of concrete floor slabs and certain perimeter air supply ducts, both immediately adjacent to the units to be installed. The Engineer will work with the HVAC Subcontractor and will notify the Contractor under contract 230.00 as to the specified dates when damping units and damping unit assemblies may be installed.
- 5) Field welding under contract 230.00 shall be accomplished using E70xx electrodes or other equivalent, approved welding process.
- 6) Washer shall be used under both bolt head and nut at all locations with oversized or elongated holes in accordance with the requirements of FB1, FB2, and FB3.

Floor Truss Seats:

- 1) Bolts and washers for floor truss seats will be supplied under contract 234.00 and shall be installed under contract 230.00.

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Shims

- 1) Shims shall be supplied and installed under contract 230.00. Shim material to be ASTM A245 Grade D...

* Formally numbered D-AB2-1.3

D-AB1-1



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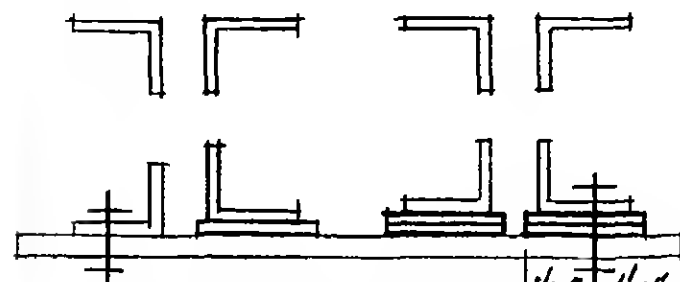
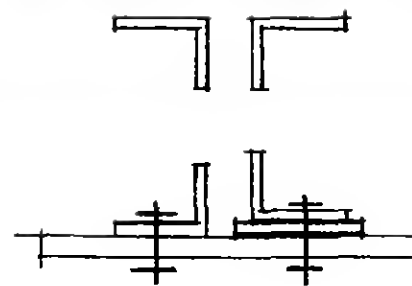
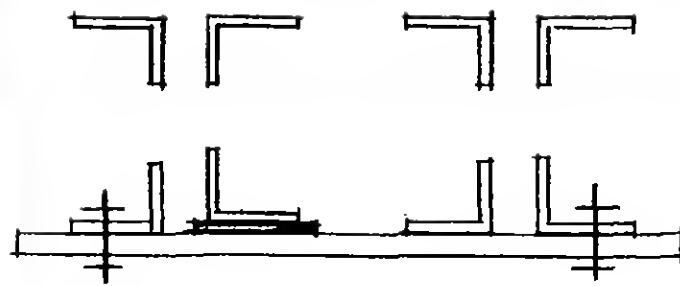
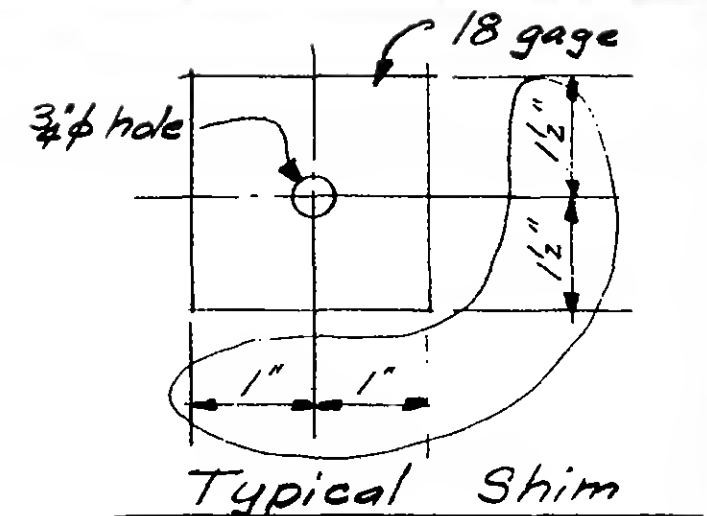
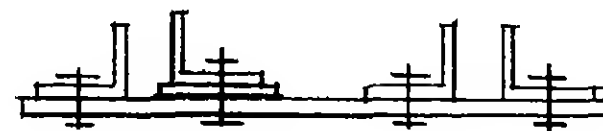
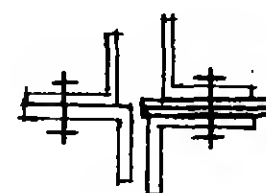
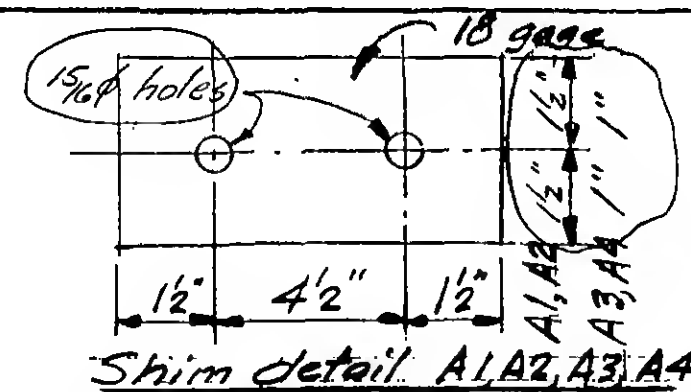
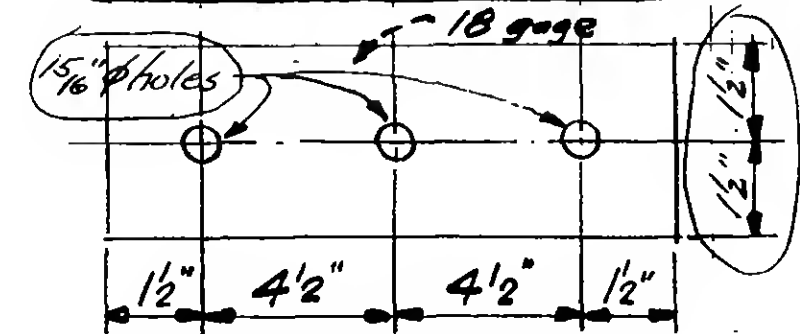
J. Adams, F. Smith

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W. Brewer

REVISIONS

6/13/69

 $\frac{1}{16}$ " $\frac{1}{16}$ " typicalDouble TrussSingle TrussTypical shim details - Truss seats - Type "A"Typical ShimType A5Type A1, A2, A3, A4Type A6, A7Shim detail A1, A2, A3, A4Shim detail A5, A6, A7Typical shim details - DSU units to bottom chord of truss - Type A1-A7

D-AB1-1.1



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PROJECT THE WORLD TRADE CENTER

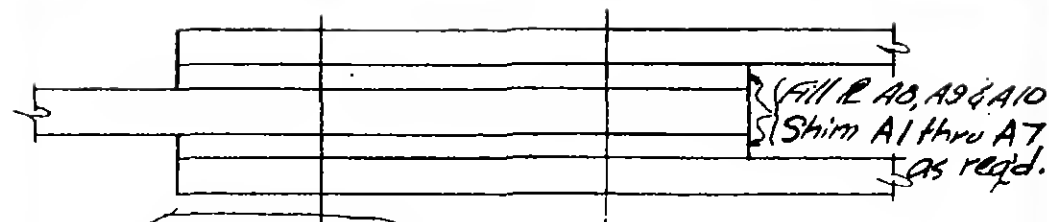
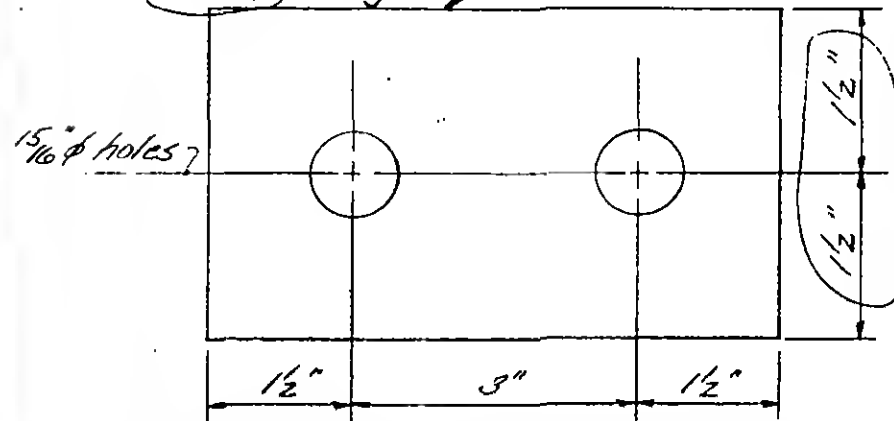
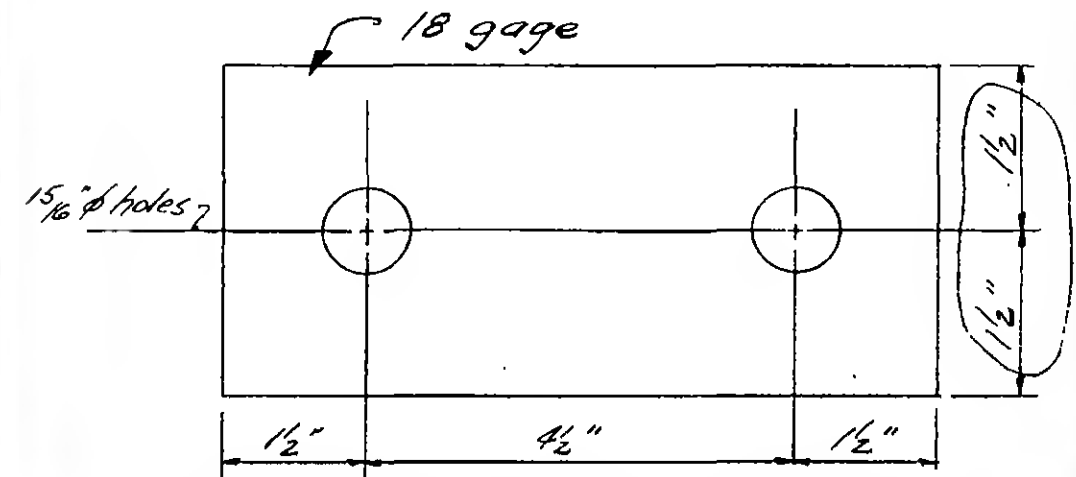
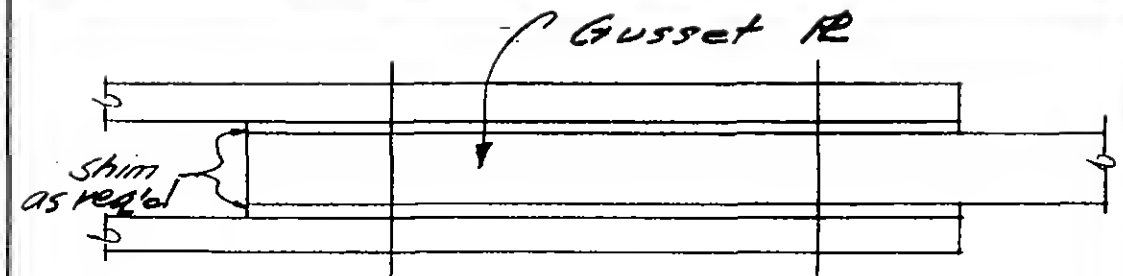
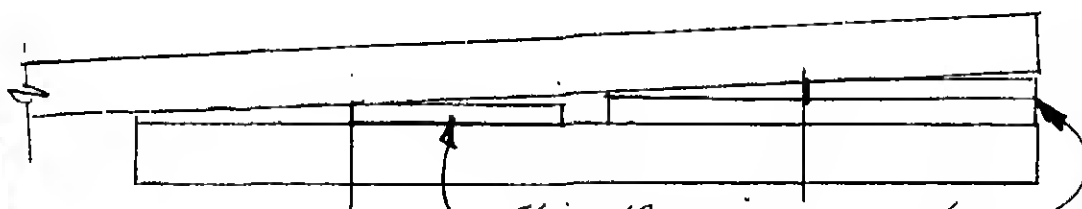
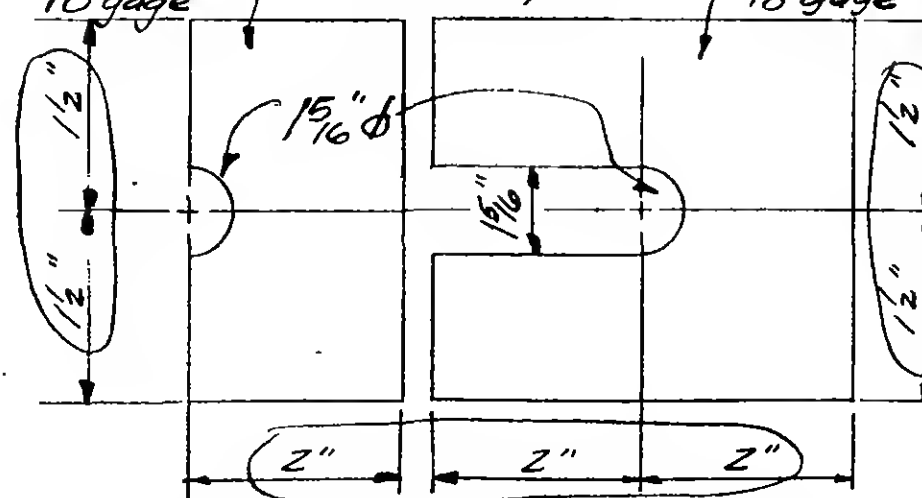
TITLE

TYPICAL SHIMMING DETAILS

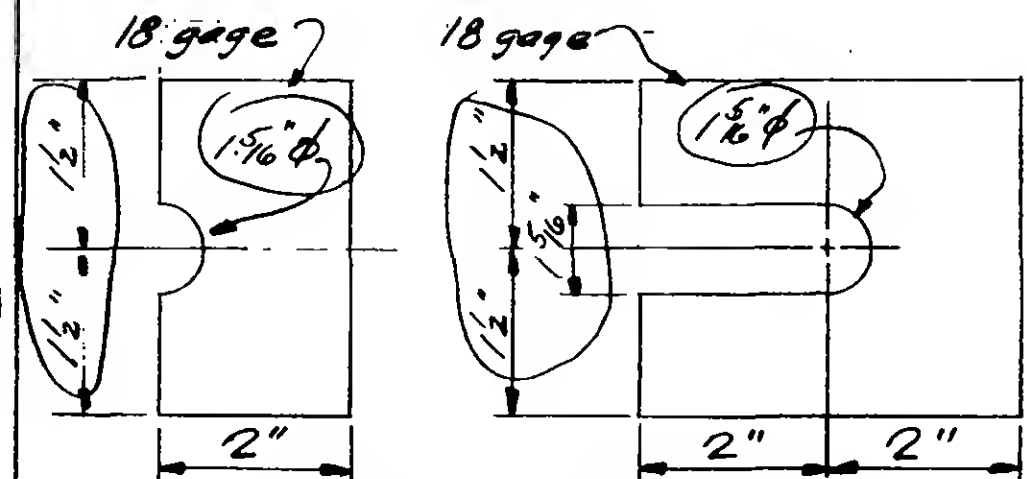
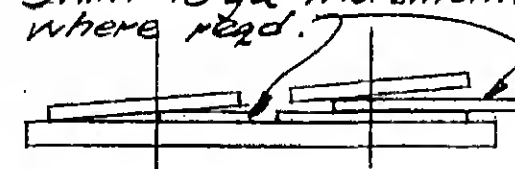
DATE 5-26-69

REVISIONS

6/13/69

Fill as req'd.
Shim 18 ga. 7TYPICAL SHIM & FILL R DETAIL
Type A damping unit to DSU damping unit extensionTYPICAL SHIM DETAIL
Type A8, A9 & A10 - DSU damping unit extension to truss18 gage
Shim 18 ga increments where req'd.
18 gageTYPICAL SHIM DETAIL
Detail B1, B2, B3, B4, B5, B6 at interior end of damper

Shim 18 ga increments where req'd.

TYPICAL SHIM DETAIL
Damping units Type A & B at exterior wall seat

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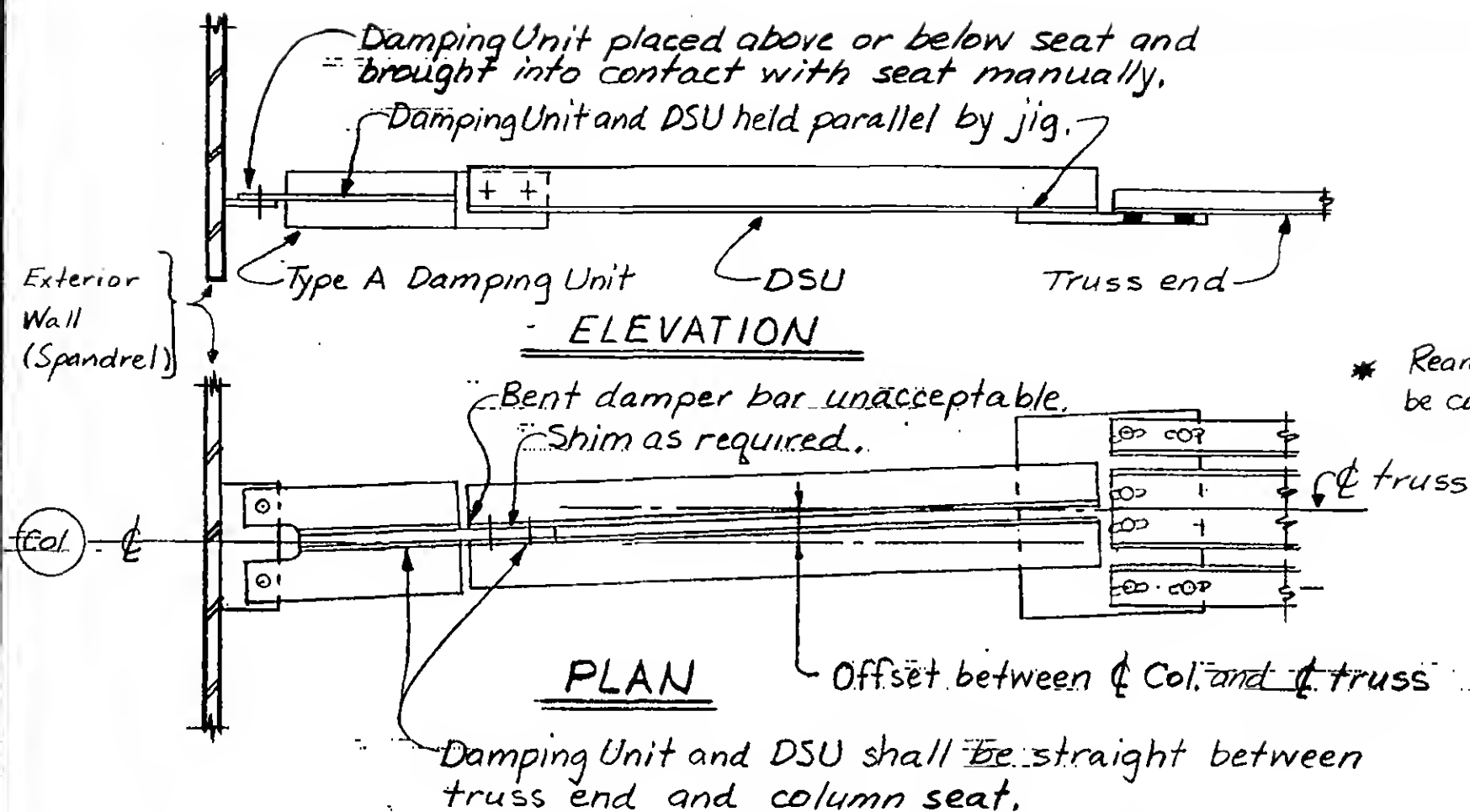
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D-AB1-1.2

PROJECT THE WORLD TRADE CENTERTITLE DAMPING UNIT INSTALLATION PROCEDURE (A1-A7)DATE 8-10-70

REVISIONS

9-15-71

DAMPING UNIT INSTALLATION PROCEDURE
(Details A1 through A7 inclusive)

1. Assemble Type A damping unit to corresponding DSU unit maintaining web of damping unit parallel to outstanding leg of DSU assembly. Provide one or more 18 gage shims (see Drawing D-AB1-1.2) as required to limit slack distance between faying surfaces of A325 friction connection to less than 1/16 inch. Torque 7/8 inch A325 bolts using turn-of-nut method. Provide A325 hardened washer under turned element.
2. Align damping unit - DSU assembly horizontally in a straight line from truss end to exterior wall seat with truss end bolts (A325 for A1, A2 and A6; A490 for A3, A4, A5, and A7) finger tight but shimmed in accord with Drawing D-AB1-1.1.
* Light reaming to achieve alignment will be permitted by Surveillance Engineer where necessary to achieve correct alignment.
3. Place damping unit in contact with upper or lower face of exterior wall seat, whichever gives the best alignment. Where damping unit does not rest on seat, unit may be seated by one man manually pushing unit into contact with the seat. Install

- A490 bolts with A325 hardened washers at bolt head and nut. Provide shims in accord with Drawing D-AB1-1.2. Shims will generally be required only to correct for twist between damping unit web extensions and exterior wall seat.
4. Wrench tighten all bolts connecting truss end to DSU and between damping unit webs and exterior seat. Tighten all bolts by turn-of-nut method. Bolt tightness will be checked at random by an inspecting wrench in accord with paragraph 6(c) of "Specification for Structural Joints Using ASTM A325 or A490 Bolts."
5. In those cases where manual force will not seat damping units, sufficient shims shall be installed at truss end connection to allow damping unit to seat.
6. All damping units in which the included plate is permanently bent during installation shall be removed and replaced.
7. All damping units which, in the erected position, show a rotational or vertical displacement of the included bar with respect to the tees shall be removed and replaced where directed by the Surveillance Engineer.

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EJWDRAWN
EJW

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D-AB1-1.3

PROJECT

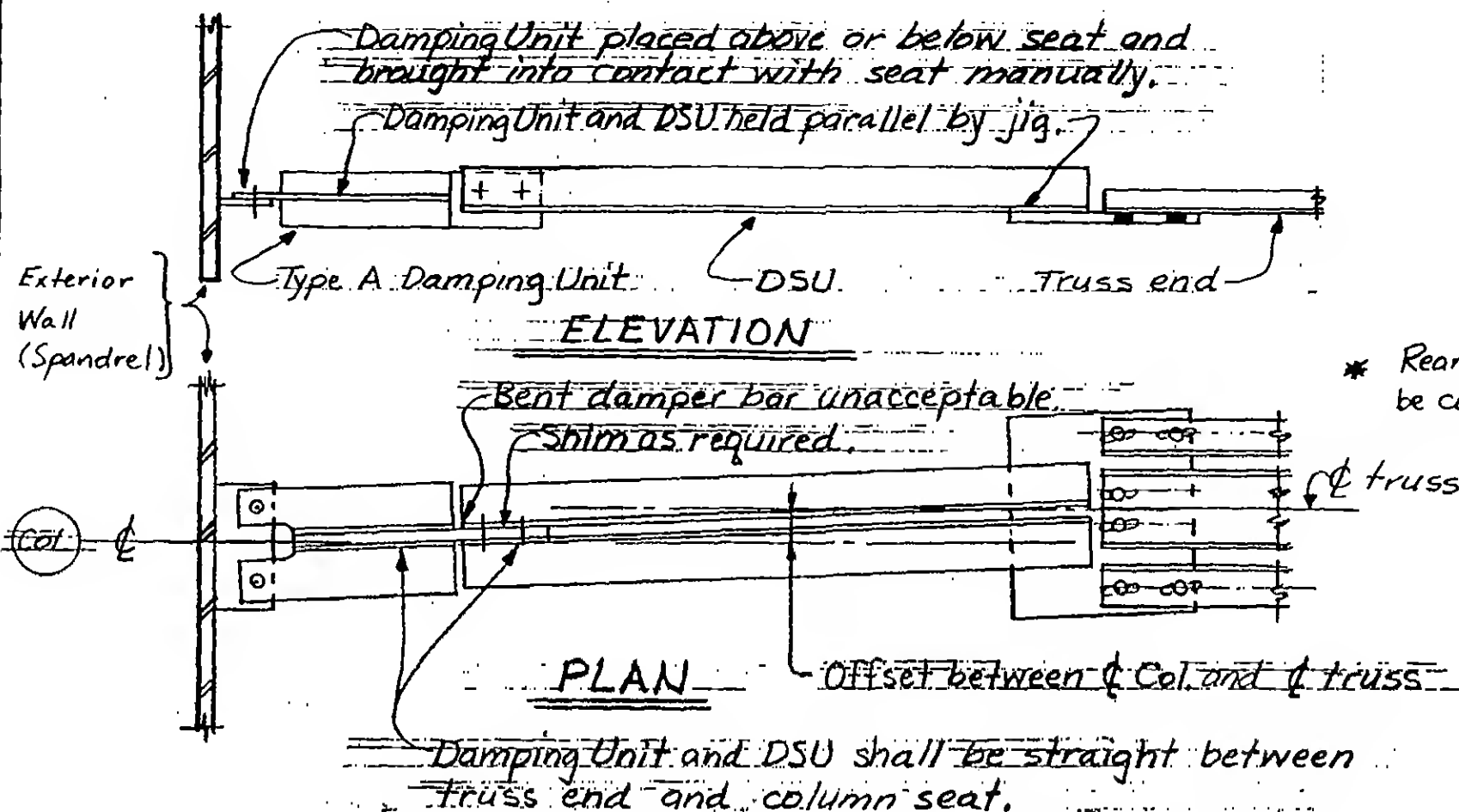
THE WORLD TRADE CENTER

TITLE

DAMPING UNIT INSTALLATION PROCEDURE (A1-A7)

DATE 8-10-70

REVISIONS

DAMPING UNIT INSTALLATION PROCEDURE
(Details A1 through A7 inclusive)

1. Assemble Type A damping unit to corresponding DSU unit maintaining web of damping unit parallel to outstanding leg of DSU assembly. Provide one or more 18 gage shims (see Drawing D-AB1-1.2) as required to limit slack distance between faying surfaces of A325 friction connection to less than 1/16 inch. Torque 7/8 inch A325 bolts using turn-of-nut method. Provide A325 hardened washer under turned element.
 2. Align damping unit - DSU assembly horizontally in a straight line from truss end to exterior wall seat with truss end bolts (A325 for A1, A2 and A6; A490 for A3, A4, A5, and A7) finger tight but shimmed in accord with Drawing D-AB1-1.1.
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3. Place damping unit in contact with upper or lower face of exterior wall seat, whichever gives the best alignment. Where damping unit does not rest on seat, unit may be seated by one man manually pushing unit into contact with the seat. Install

A490 bolts with A325 hardened washers at bolt head and nut. Provide shims in accord with Drawing D-AB1-1.2. Shims will generally be required only to correct for twist between damping unit web extensions and exterior wall seat.

4. Wrench tighten all bolts connecting truss end to DSU and between damping unit webs and exterior seat. Tighten all bolts by turn-of-nut method. Bolt tightness will be checked at random by an inspecting wrench in accord with paragraph 6(c) of "Specification for Structural Joints Using ASTM A325 or A490 Bolts."
5. In those cases where manual force will not seat damping units, sufficient shims shall be installed at truss end connection to allow damping unit to seat.
6. All damping units in which the included plate is permanently bent during installation shall be removed and replaced.
7. All damping units which, in the erected position, show a rotational or vertical displacement of the included bar with respect to the tees shall be removed and replaced where directed by the Surveillance Engineer.

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EJW

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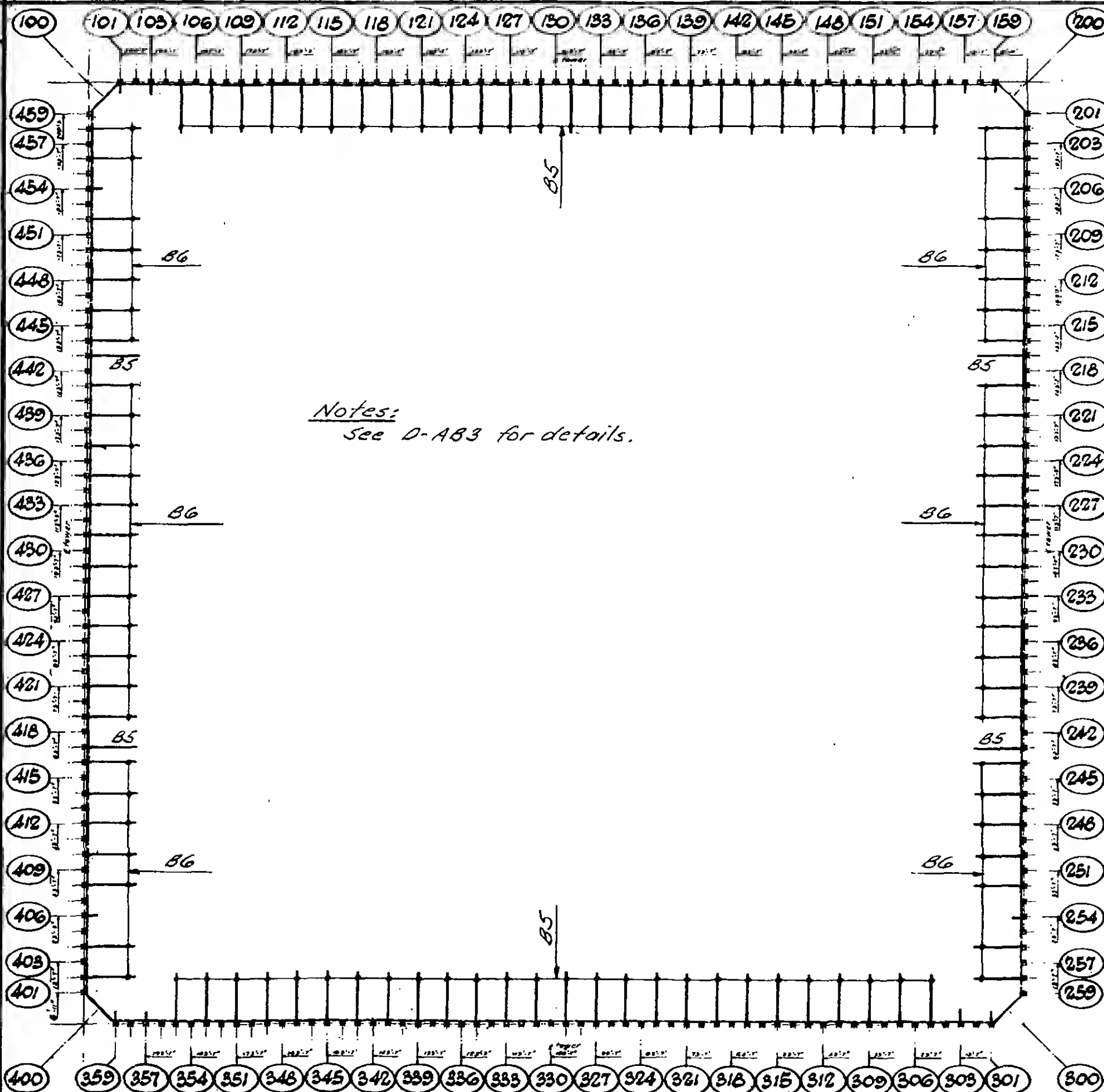
D-AB2-1.3

PROJECT THE WORLD TRADE CENTER

TITLE DAMPING UNIT KEY PLAN - FLOOR 7

DATE 3/18/69

REVISIONS



NORTH



TOWER A



NORTH

TOWER B

PER FLOOR

No.	Type
56	85
52	86

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S. Keap

DRAWN

J. Adams

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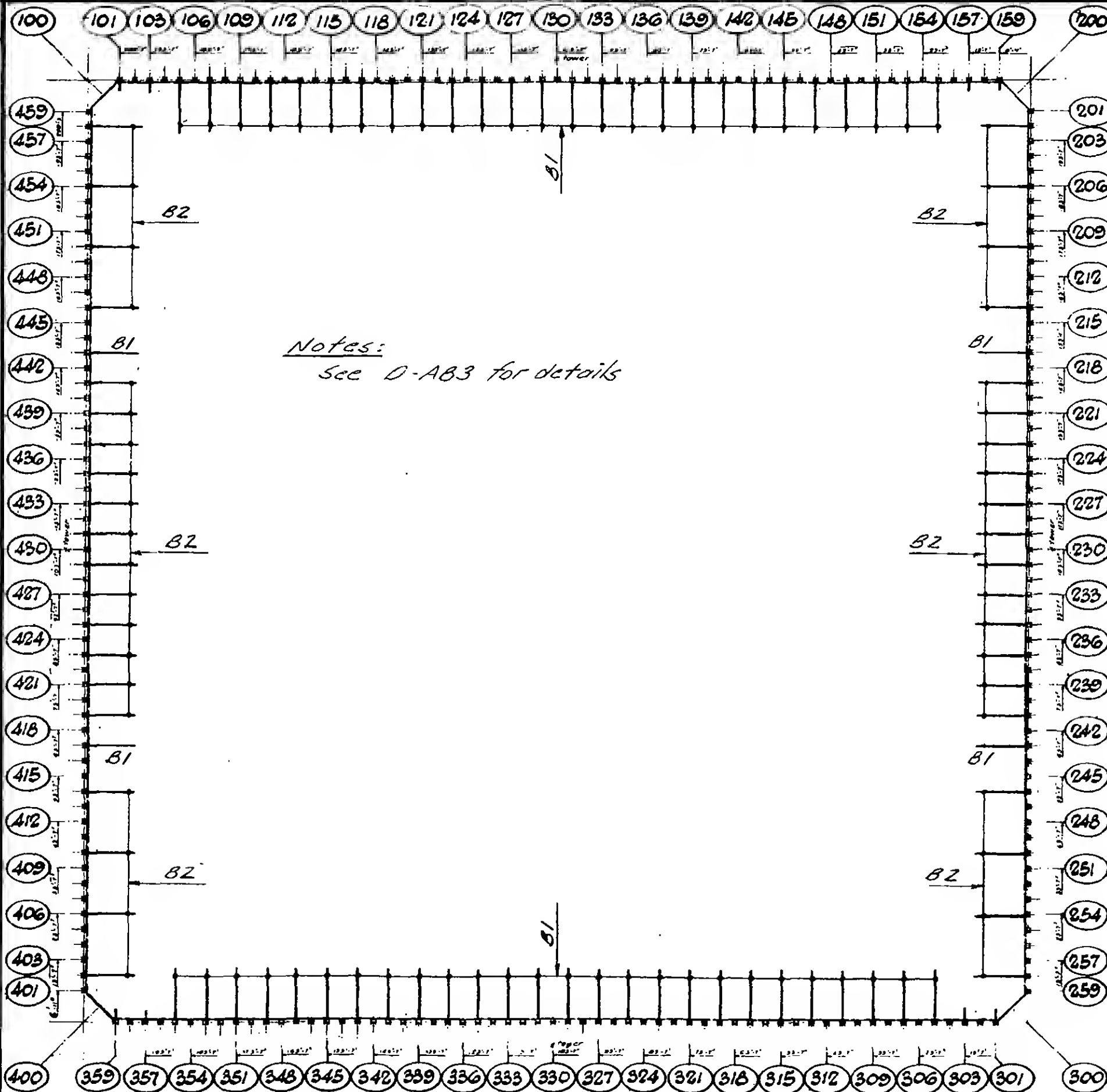
D-AB1-2

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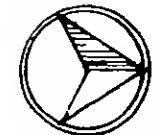
TITLE DAMPING UNIT KEY PLAN - FLOOR 9

DATE 3/18/69

REVISIONS



TOWER A



TOWER B

PER FLOOR	
No.	Type
56	B1
40	B2

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S. Karp

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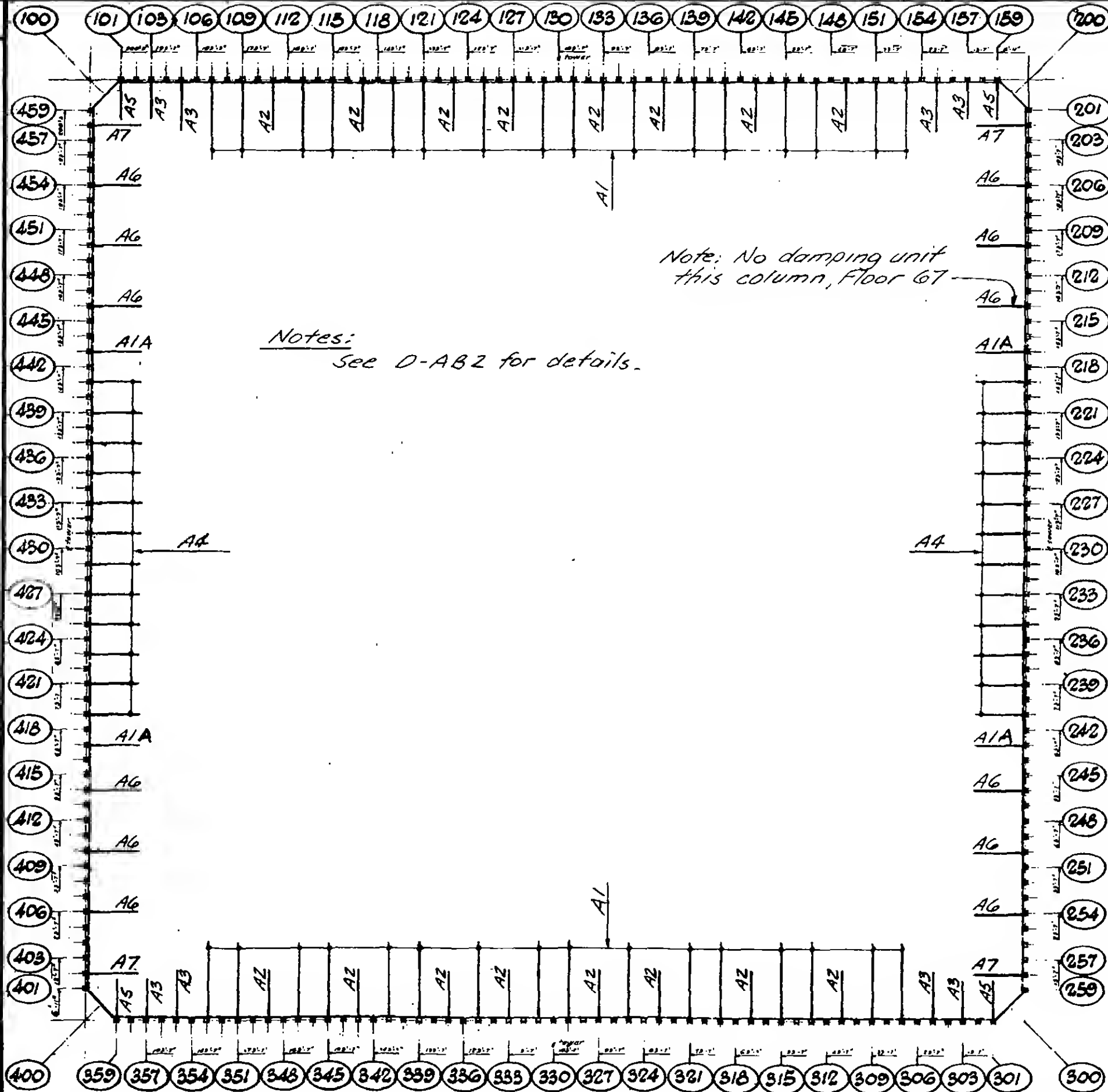
D-AB1-3

PROJECT THE WORLD TRADE CENTER

TITLE DAMPING UNIT KEY PLAN - FLOORS (SEE TABLE) TOWER A

DATE 3/18/69

REVISIONS



NORTH



TOWER A

FLOORS INCLUDED
10-24
26-40
50-58
60-74
84-91
93-106

PER FLOOR	
No.	Type
36	A1/A2
16	A2
8	A3
24	A4
4	A5
10/12	A6
4	A7

(1) Floor 67
 (2) Incl. 4 - A1A

D-AB1-4.1

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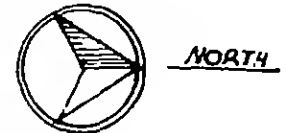
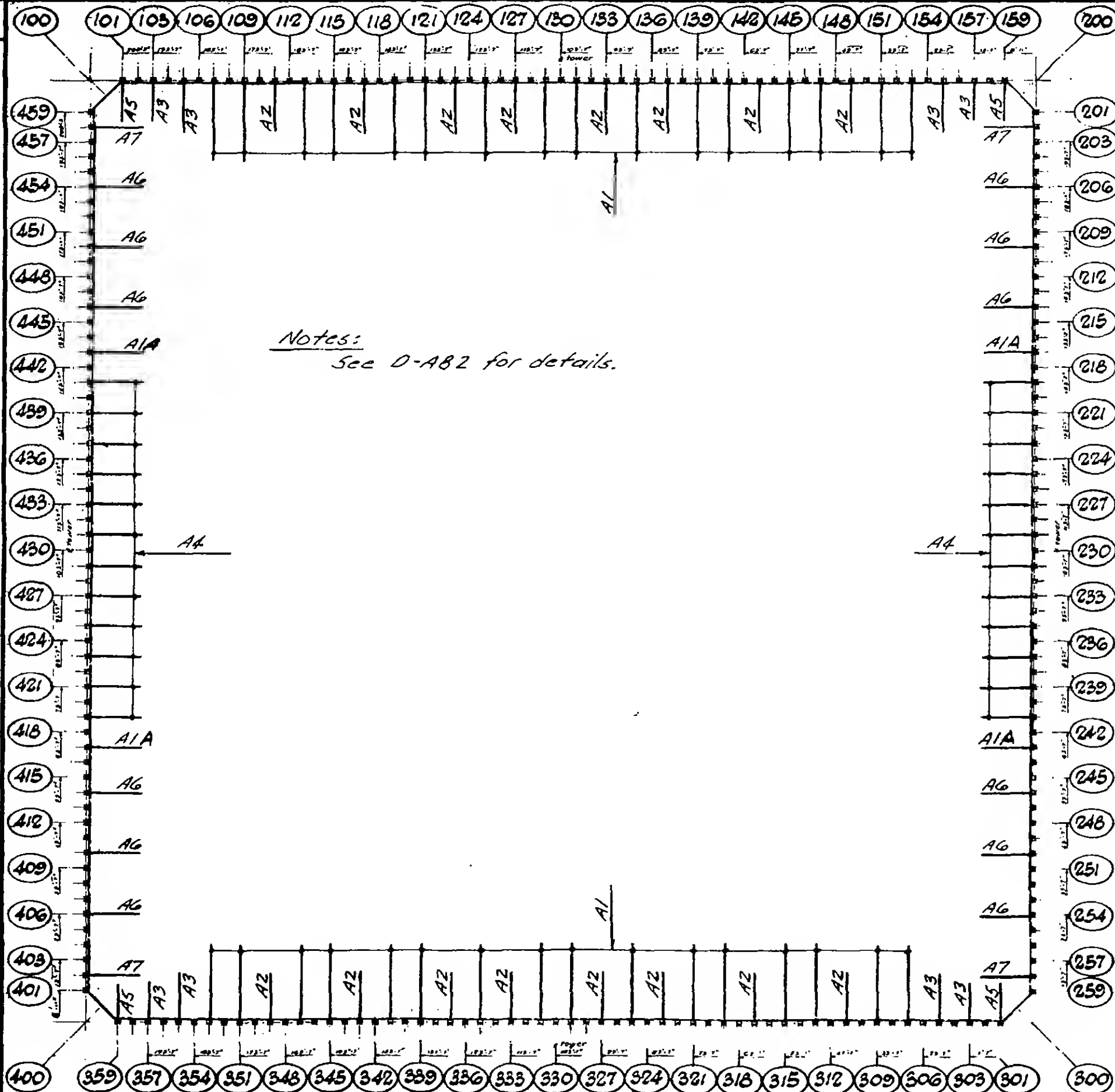
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TITLE DAMPING UNIT KEY PLAN - FLOORS (SEE TABLE) TOWER B

DATE 3/18/69

REVISIONS



TOWER B

FLOORS INCLUDED

14-24
26-40
50-58
60-74
84-91
93-106

PER FLOOR

No.	Type
36	A1(1)
16	A2
8	A3
24	A4
4	A5
12	A6
4	A7

(U) Incl. 4. A1A

D-AB1-4.2

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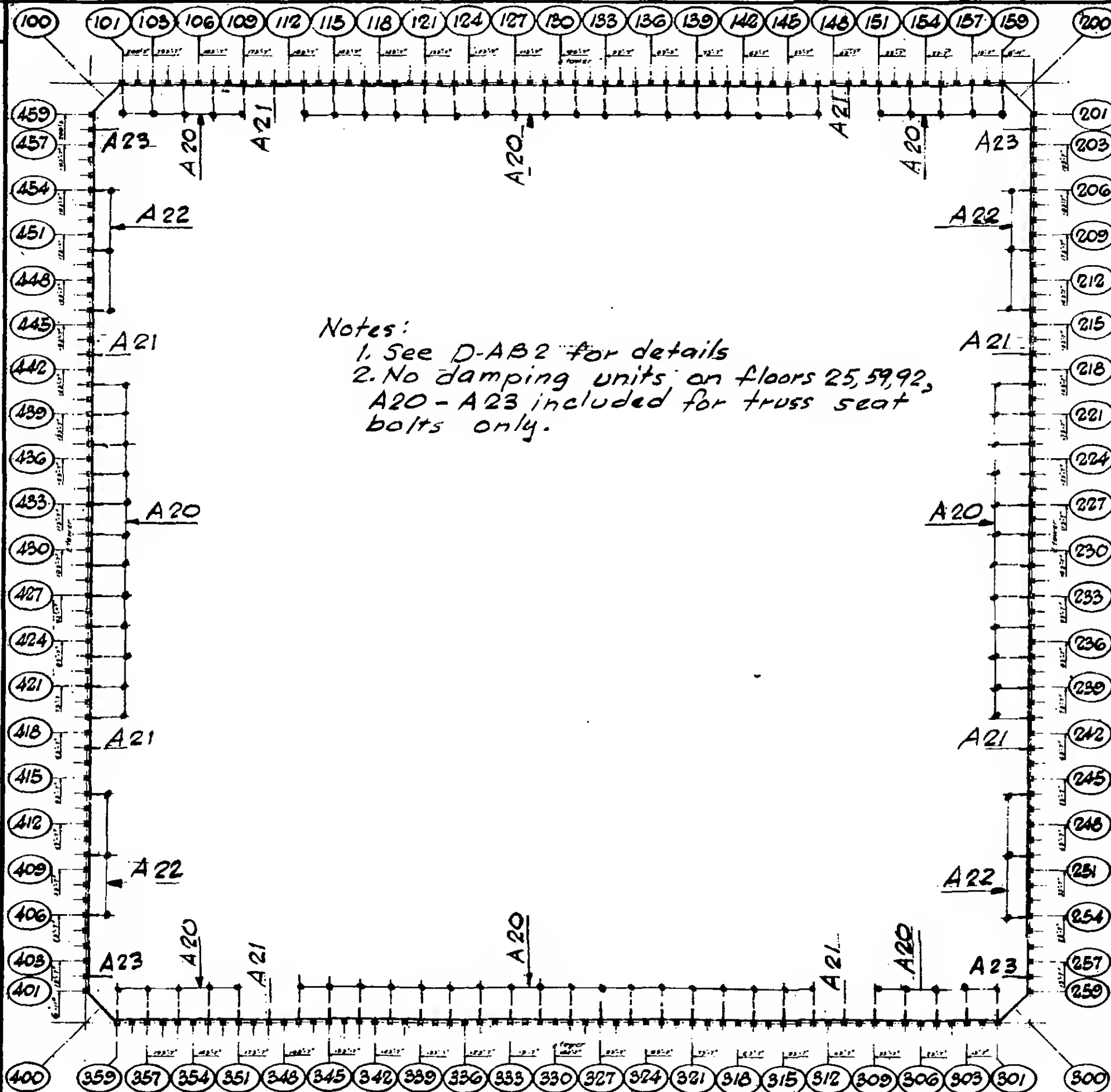
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TITLE KEY PLAN - FLOORS 25, 59, 92

DATE 3/18/69

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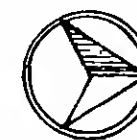


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TOWER A

NORTH



TOWER B

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D-AB1-4.3

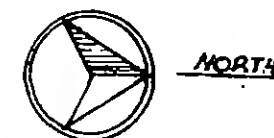
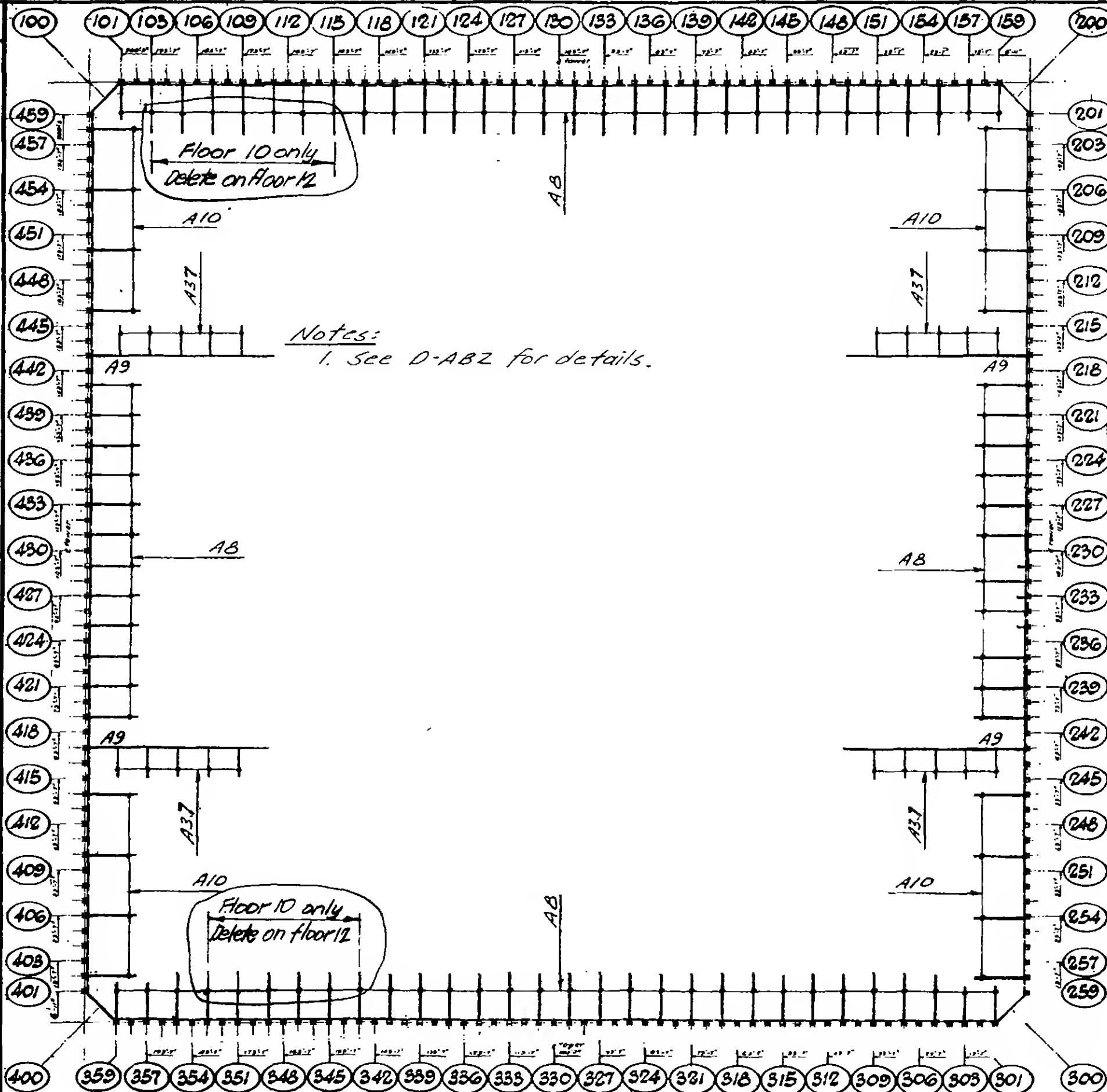
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TITLE DAMPING UNIT KEY PLAN - FLOOR 10 & 12 TOWER B

DATE 5/18/69

REVISIONS

7-9-71



TOWER B

	Fl. 10	Fl. 12	
No.	No.	Type	
224	83	70	AB
227	4	4	A9
	16	16	A10
230	20	20	A37

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D-AB1-4.4

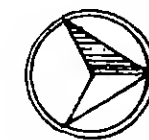
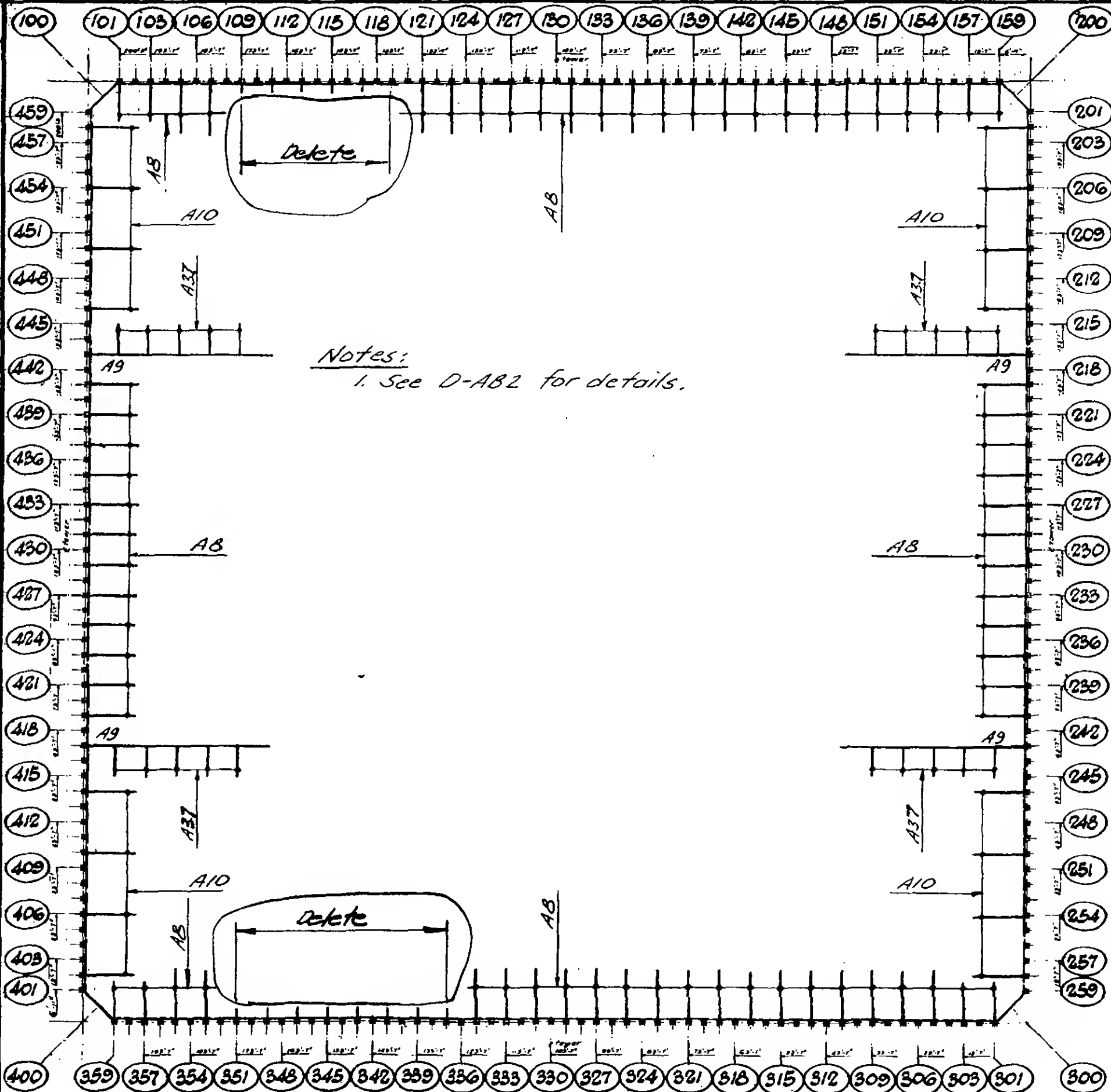
PROJECT THE WORLD TRADE CENTER

TITLE DAMPING UNIT KEY PLAN - FLOOR 11 TOWER B

DATE 3/18/69

REVISIONS

7-9-71



NORTH

TOWER B

PER FLOOR	
No.	Type
70	AB
4	A9
16	A10
20	A37

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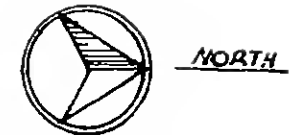
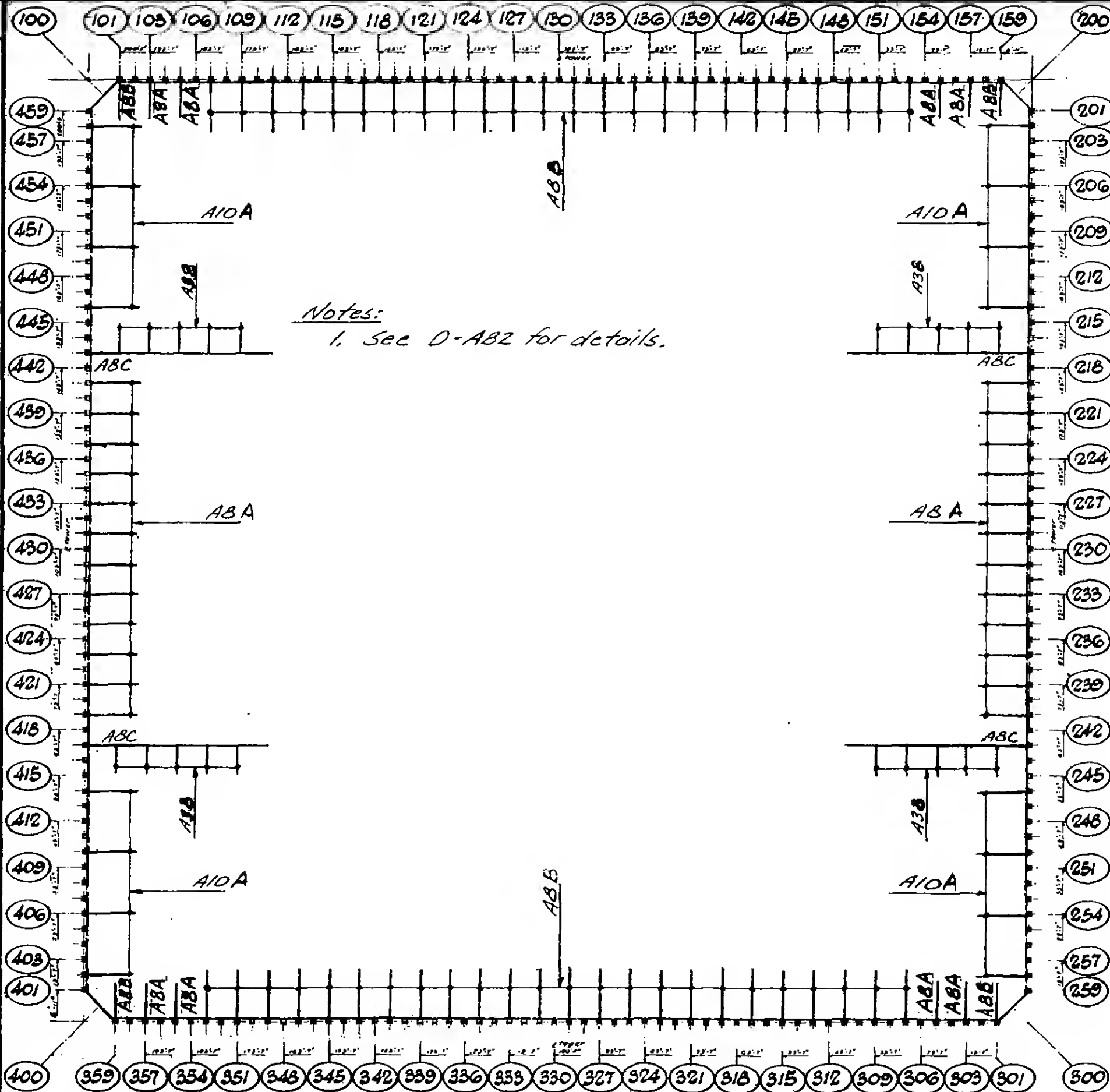
D-AB1-4.5

PROJECT THE WORLD TRADE CENTER

TITLE DAMPING UNIT KEY PLAN - FLOOR 13 TOWER B

DATE 3/18/69

REVISIONS



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TOWER B

PER FLOOR	
No.	Type
88	AB
10	A10
20	A3B

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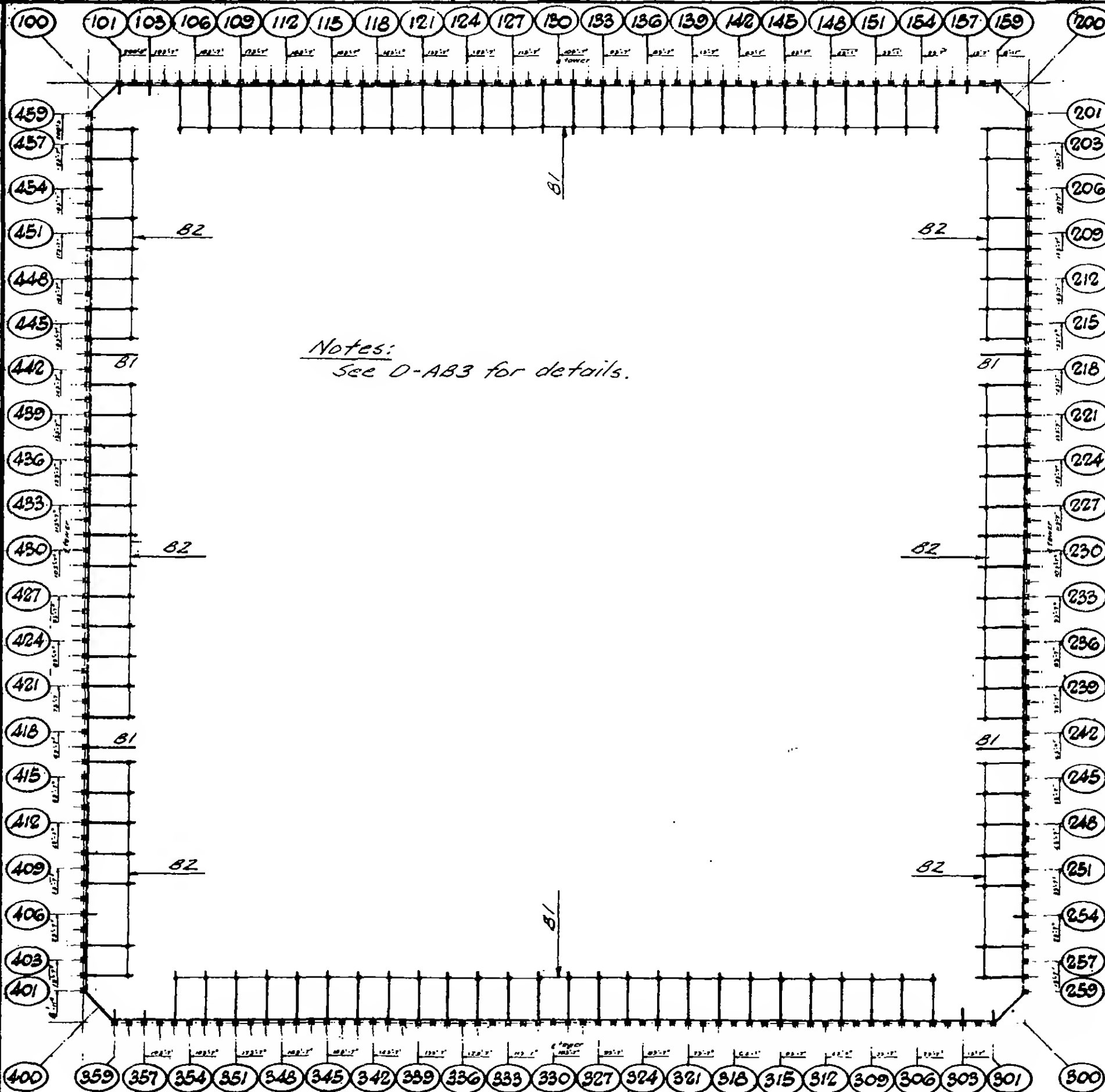
D-AB1-4.6

PROJECT THE WORLD TRADE CENTER

TITLE DAMPING UNIT KEY PLAN - FLOORS 41, 75

DATE 3/18/69

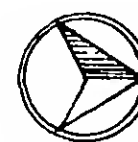
REVISIONS



NORTH



TOWER A



NORTH

TOWER B

PER FLOOR	
No.	Type
56	B1
52	B2

DESIGNED

ADAMS
J. Adams

REVIEWED

W. Brewer

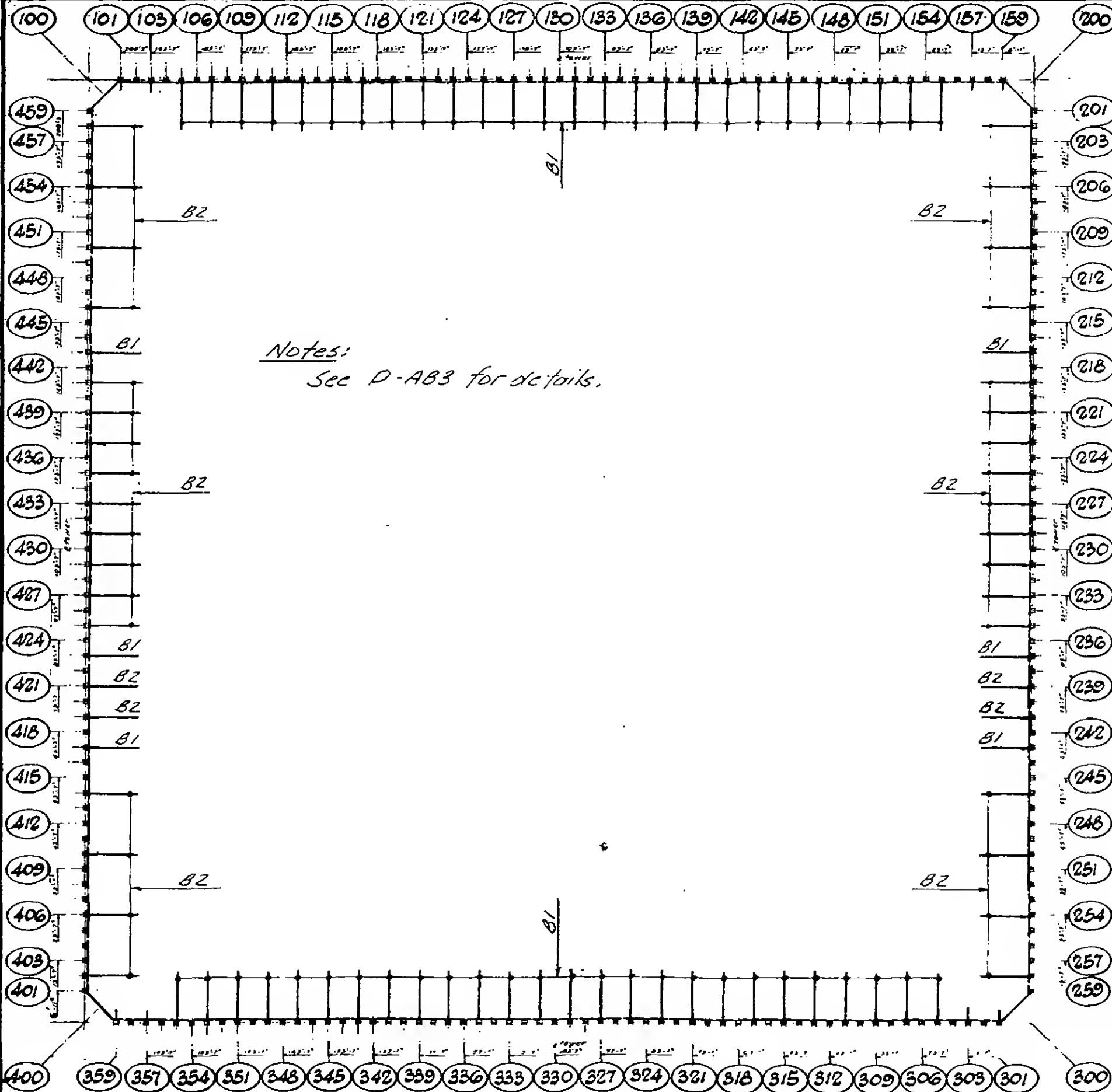
D-AB1-5

PROJECT THE WORLD TRADE CENTER

TITLE DAMPING UNIT KEY PLAN - FLOOR 43

DATE 3/18/69

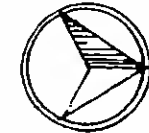
REVISIONS



NORTH



TOWER A



NORTH

TOWER B

PER FLOOR	
No.	Type
58	B1
38	B2

DESIGNED

S. Karp

DRAWN

J. Adams

REVIEWED

W. B. Bauer

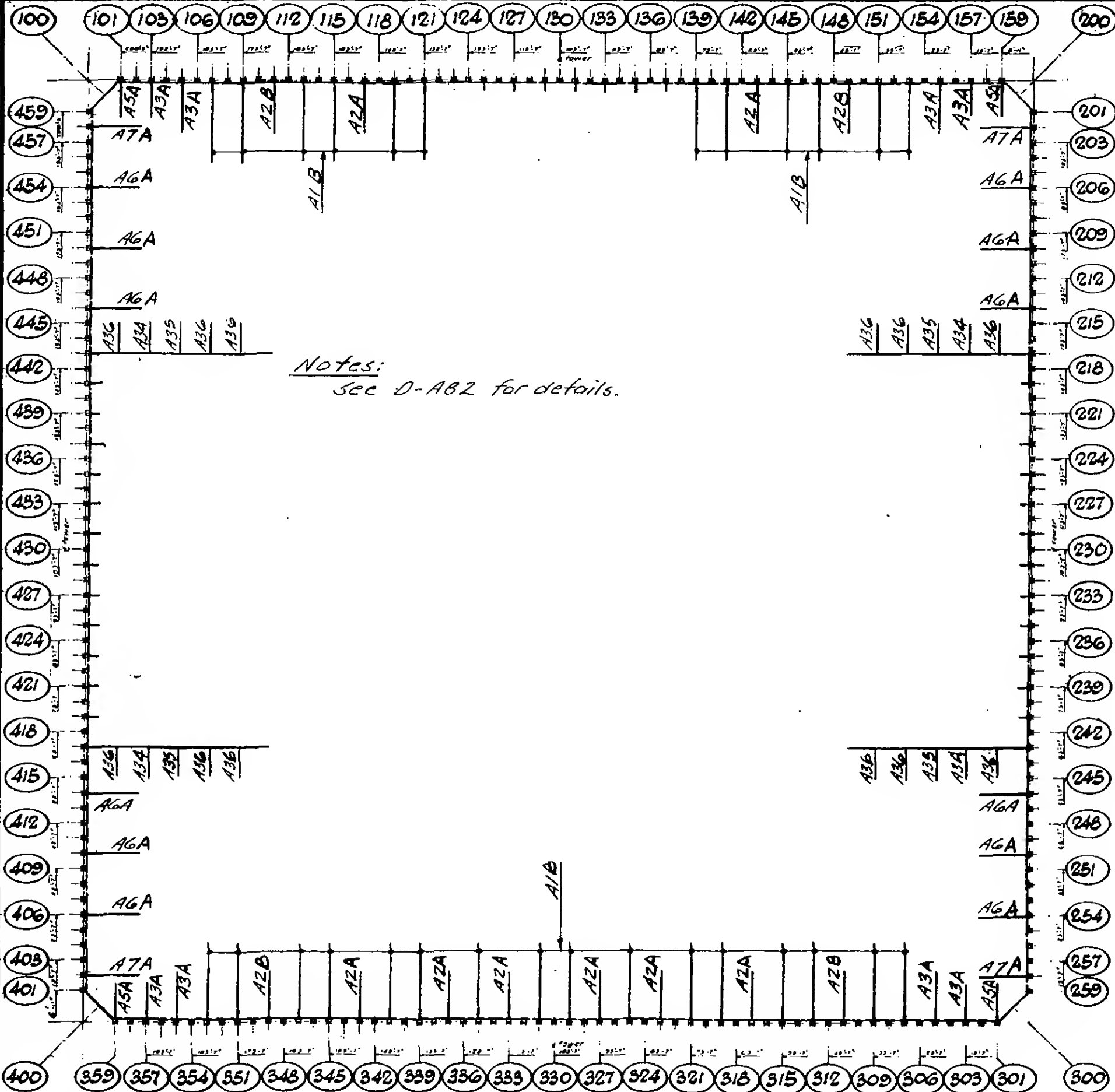
D-AB1-6

PROJECT THE WORLD TRADE CENTER

TITLE DAMPING UNIT KEY PLAN - FLOOR 44

DATE 3/18/69

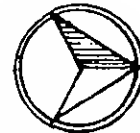
REVISIONS



NORTH



TOWER A



NORTH

TOWER B

PER FLOOR	
No.	Type
28	A1B
8	A2A
4	A2B
8	A3A
4	A5A
12	A6A
4	A7A
4	A34
4	A35
12	A36

DESIGNED

Karp

DRAWN

J. Adams

REVIEWED

W. Brewer

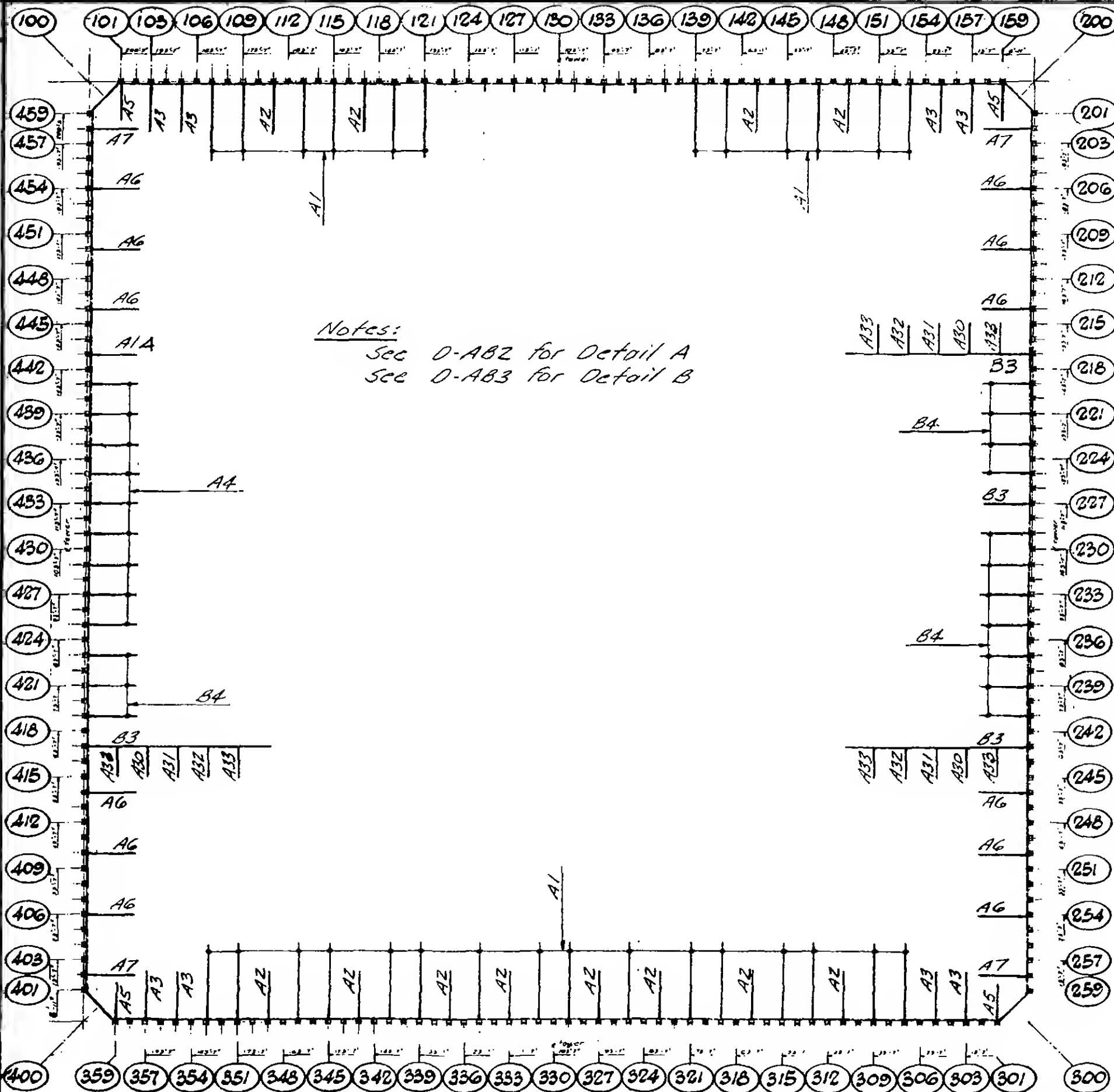
D-AB1-7

PROJECT THE WORLD TRADE CENTER

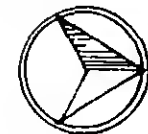
TITLE DAMPING UNIT KEY PLAN - FLOOR 45

DATE 9/18/69

REVISIONS



TOWER A



TOWER B

PER FLOOR	
No.	Floor
29	A1(1)
12	A2
8	A3
9	A4
4	A5
12	A6
4	A7
4	B3
14	B4
3	A30
3	A31
3	A32
6	A33

(1) Incl. 1-A1A

DESIGNED

Karp

DRAWN

J. Adams

REVIEWED

D. Brewer

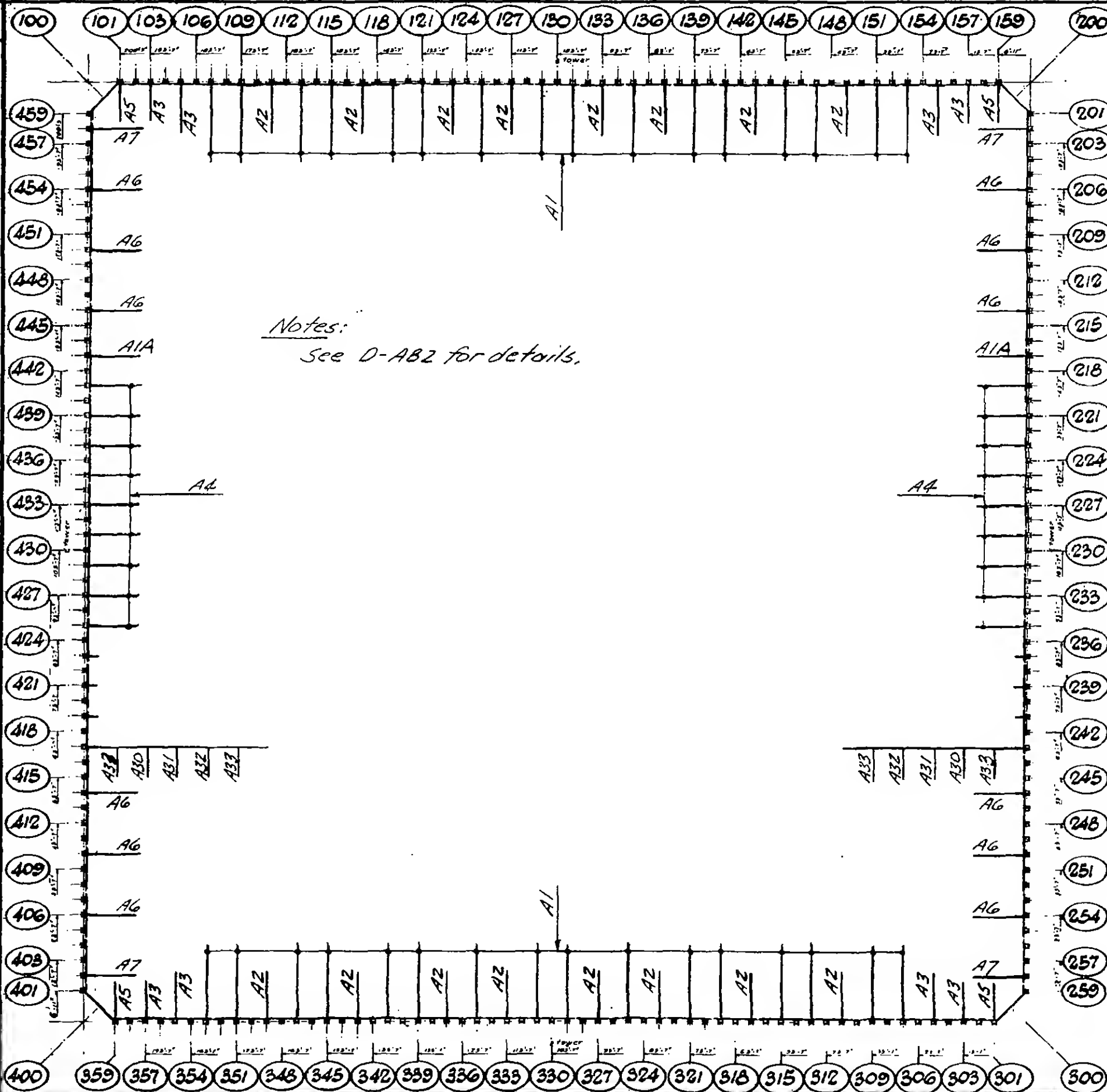
D-AB1-B

PROJECT THE WORLD TRADE CENTER

TITLE DAMPING UNIT KEY PLAN - FLOORS 46-49

DATE 3/18/69

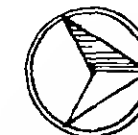
REVISIONS



NORTH



TOWER A



NORTH

TOWER B

PER FLOOR	
No.	Type
34	A1(1)
16	A2
8	A3
18	A4
4	A5
12	A6
4	A7
2	A30
2	A31
2	A32
4	A33

(1) Incl. 2-A1A

DESIGNED

J. Karp

DRAWN

J. Adams

REVIEWED

W. Brown

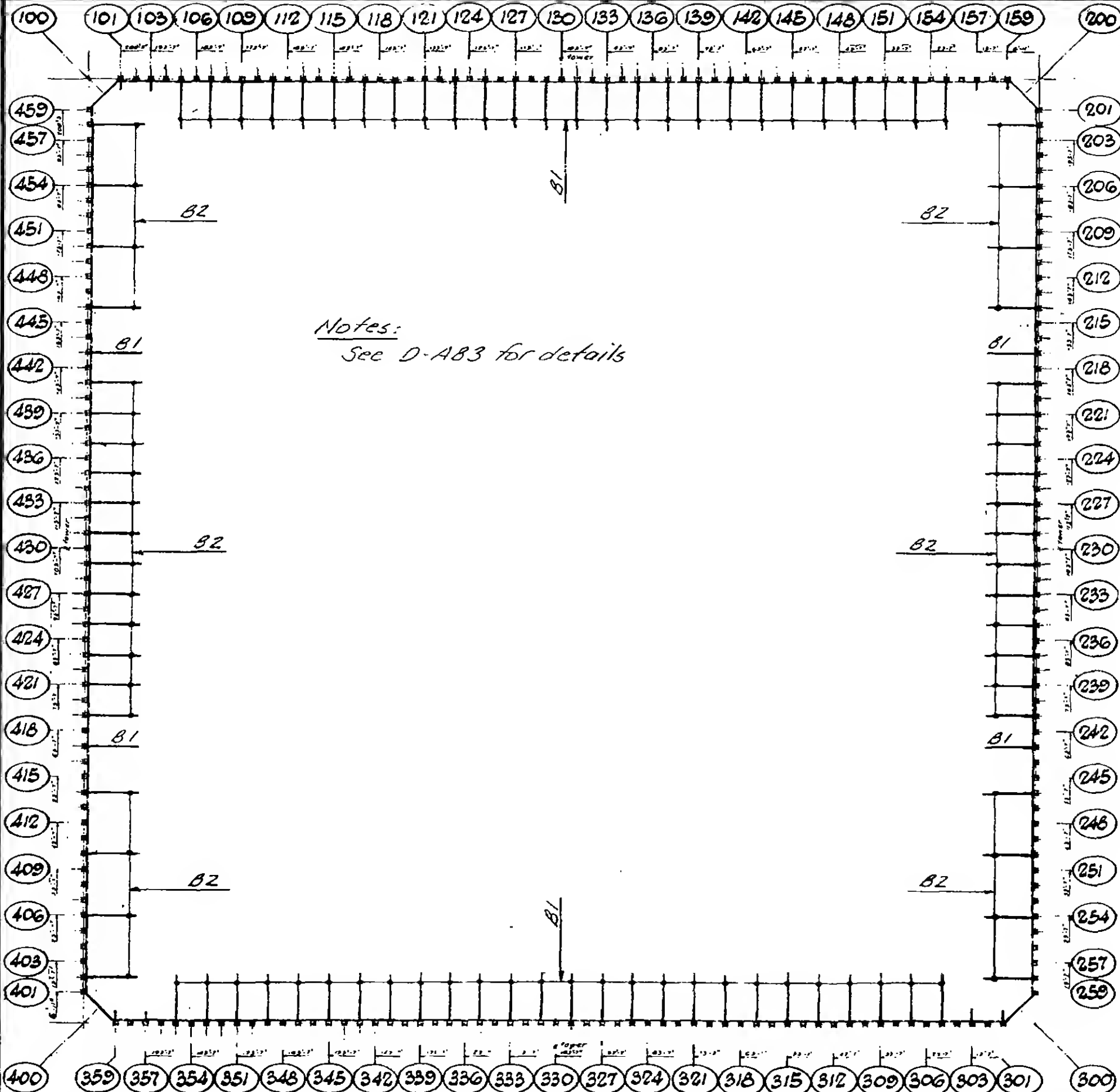
D-AB1-9

PROJECT THE WORLD TRADE CENTER

TITLE DAMPING UNIT KEY PLAN - FLOOR 77

DATE 3/18/69

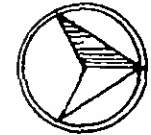
REVISIONS



NORTH



TOWER A



NORTH

TOWER B

DESIGNED

J. Kapp

DRAWN

J. Adams

REVIEWED

W. Brower

D-A81-10

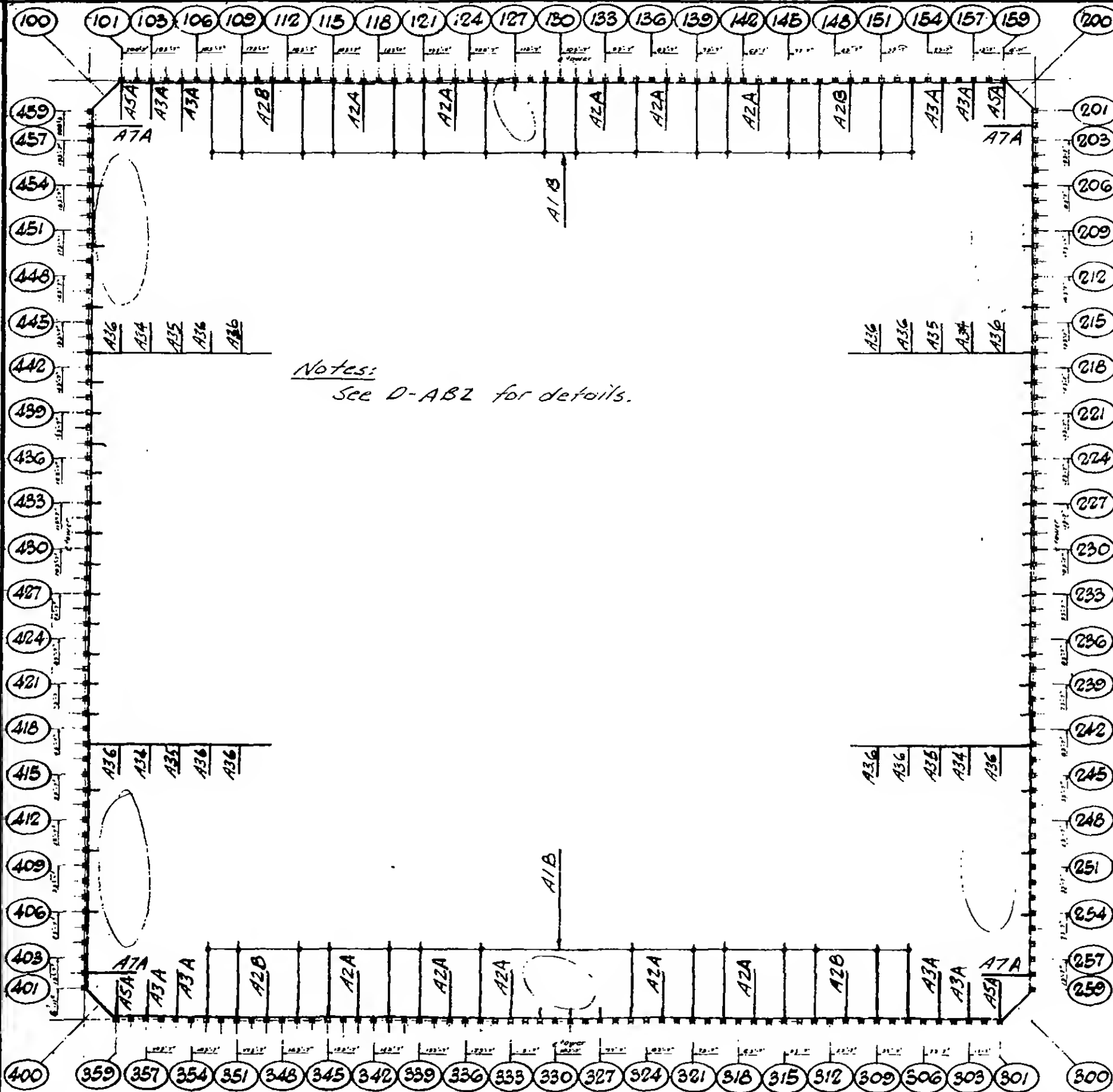
PROJECT THE WORLD TRADE CENTER

TITLE DAMPING UNIT KEY PLAN - FLOOR 78

DATE 3/18/69

REVISIONS

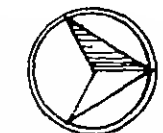
8-29-69



NORTH



TOWER A



MORT.4

TOWER B

PER FLOOR	
No.	Type
30	A1B
10	A2A
4	A2B
8	A3A
4	A5A
4	A7A
4	A34
4	A35
12	A36

DESIGNED

S. Karp

WILLIAMS

J. Adams

REVIEWED

103 B

12. P. A.

O-ABI-11

Structural & Civil Engineers

TITLE DAMPING UNIT KEY PLAN - FLOOR 79

DATE 3/18/69

Notes:
See D-AB2 for Detail A
See D-AB3 for Detail B

TOWER A

TOWER B

PER FLOOR	
No.	Type
33	A1(1)
16	A2
8	A3
9	A4
4	A5
12	A6
4	A7
3	B3
15	B4
3	A30
3	A31
3	A32
6	A33

(1) Incl. 1- A/A

DESIGNED
C. H. A.

J. Karp
PRAYN

J. Adams

REVIEWED

D-ABI-12

SKILLING, HELLE. CHRISTIANSEN, ROBERTSON

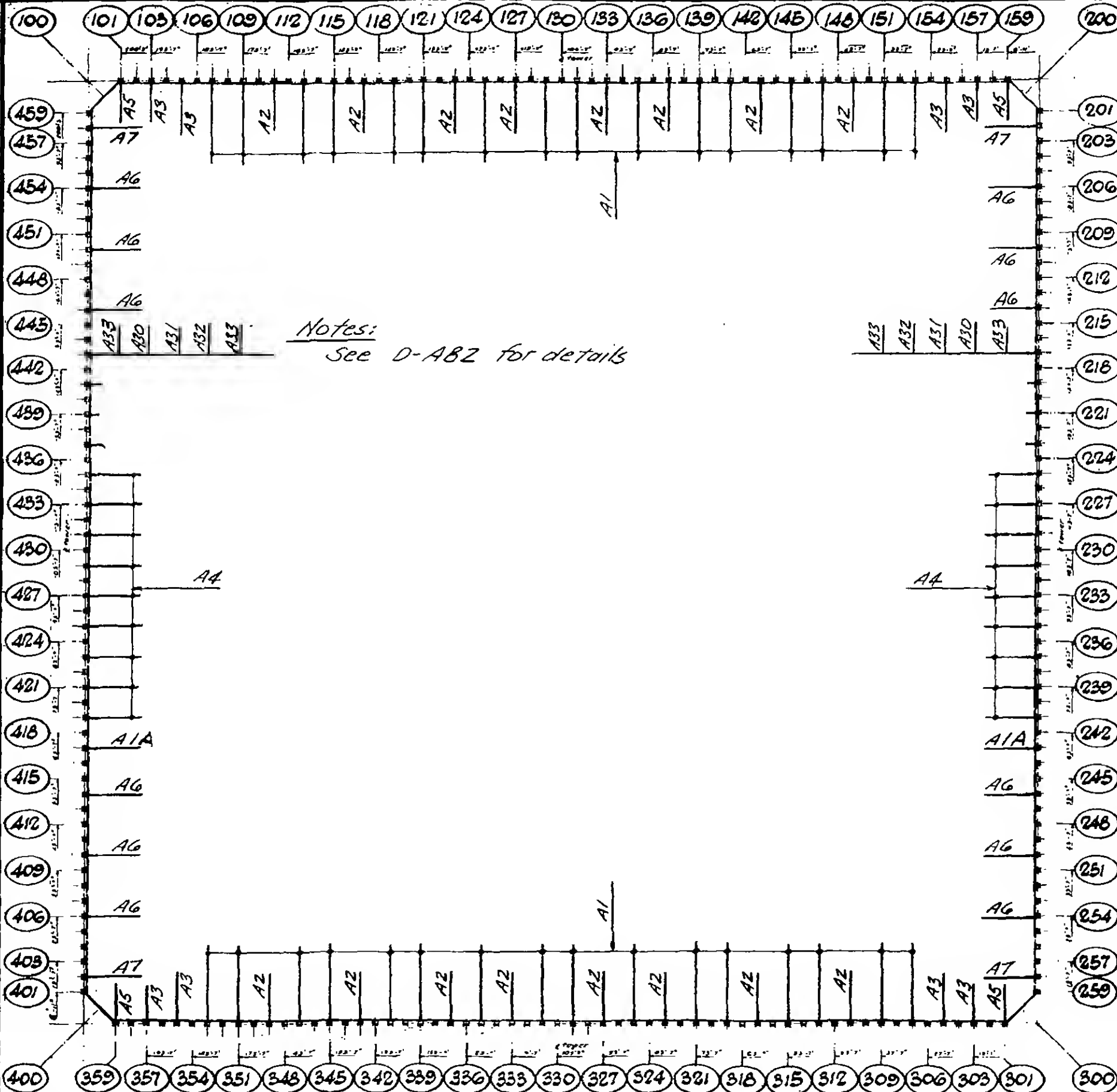
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE DAMPING UNIT KEY PLAN - FLOORS 80-83

DATE 8/18/69

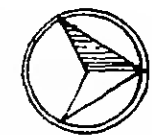
REVISIONS



NORTH



TOWER A



NORTH

TOWER B

PER FLOOR	
No.	Type
34	A1(1)
16	A2
8	A3
18	A4
4	A5
12	A6
4	A7
2	A30
2	A31
2	A32
4	A33

(1) Incl. 2-A1A

DESIGNED

S. Karp

DRAWN

J. Adams

REVIEWED

W. Brewer

D-AB1-13

SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

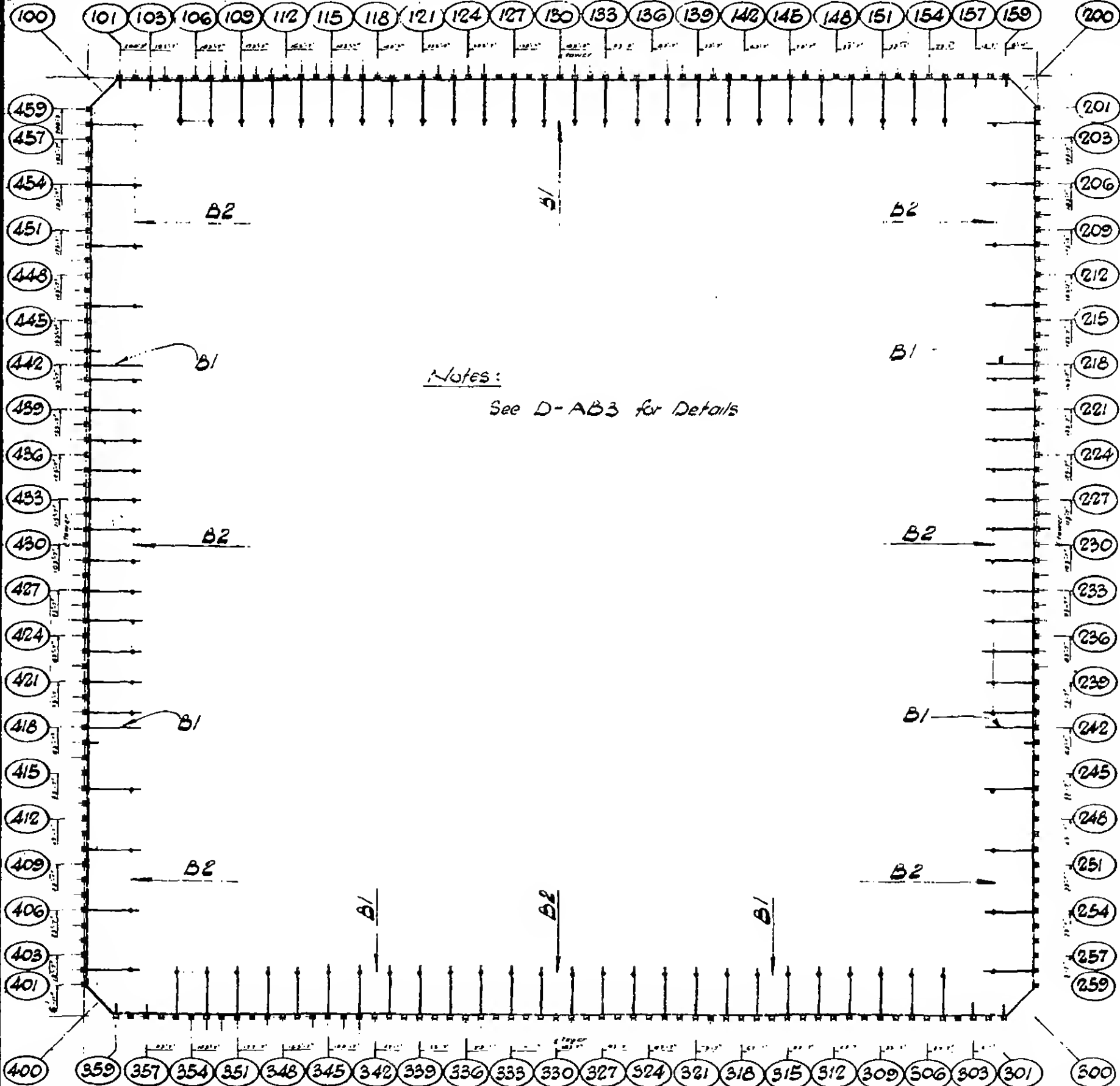
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE DAMPING UNIT KEY PLAN - FLOOR 107 - TOWER A

DATE 9-15-71

REVISIONS



NORTH



PER FLOOR	
No.	Type
54	B1
42	B2

DESIGNED

DRAWN

REVIEWED

D-AB1-14.1

SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

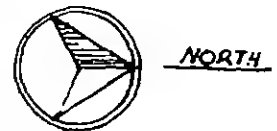
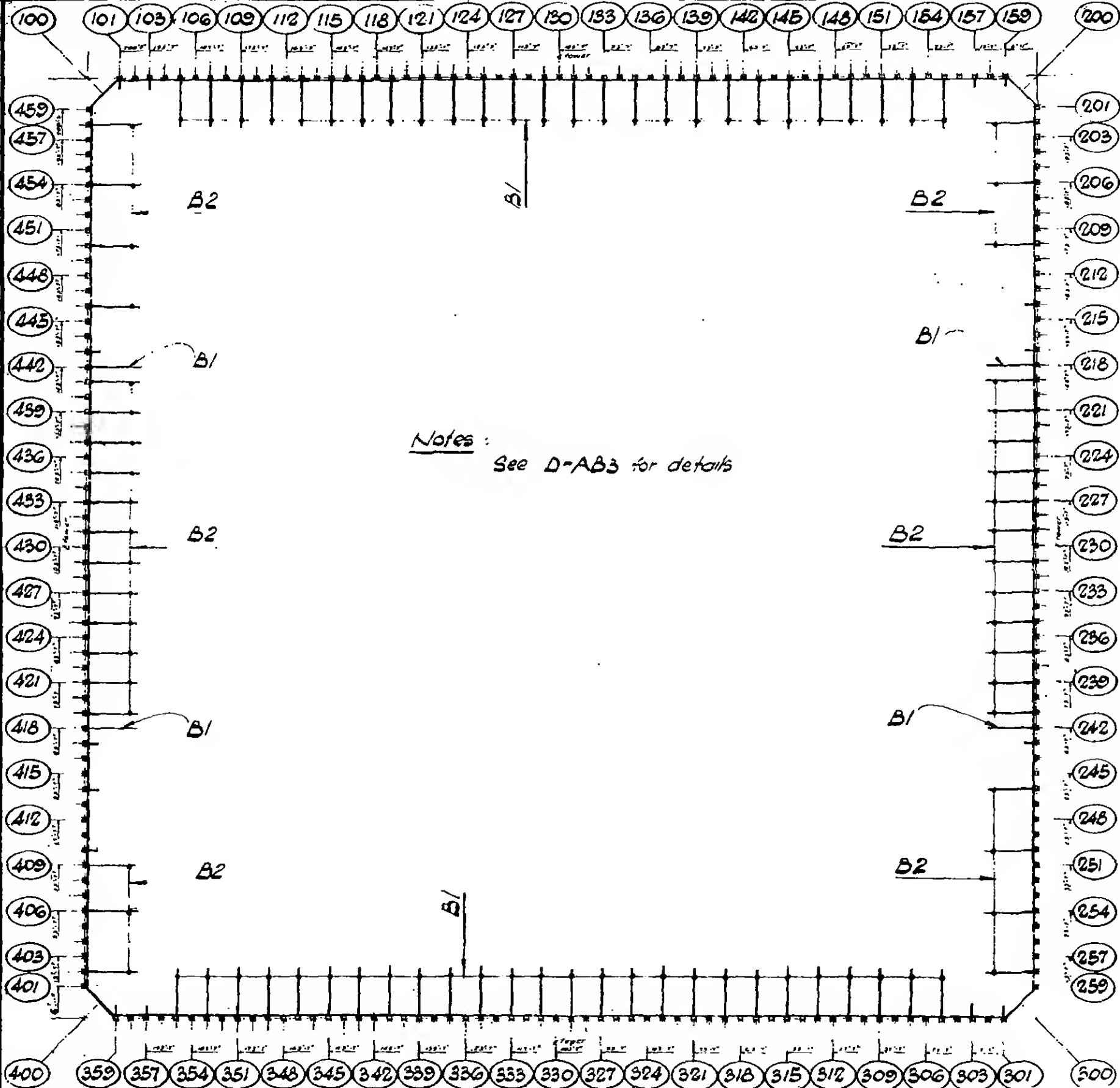
Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE DAMPING UNIT KEY PLAN - FLOOR 107 - TOWER B

DATE 9-15-71

REVISIONS



PER FLOOR	
No.	Type
56	B1
38	B2

DESIGNED

DRAWN

REVIEWED

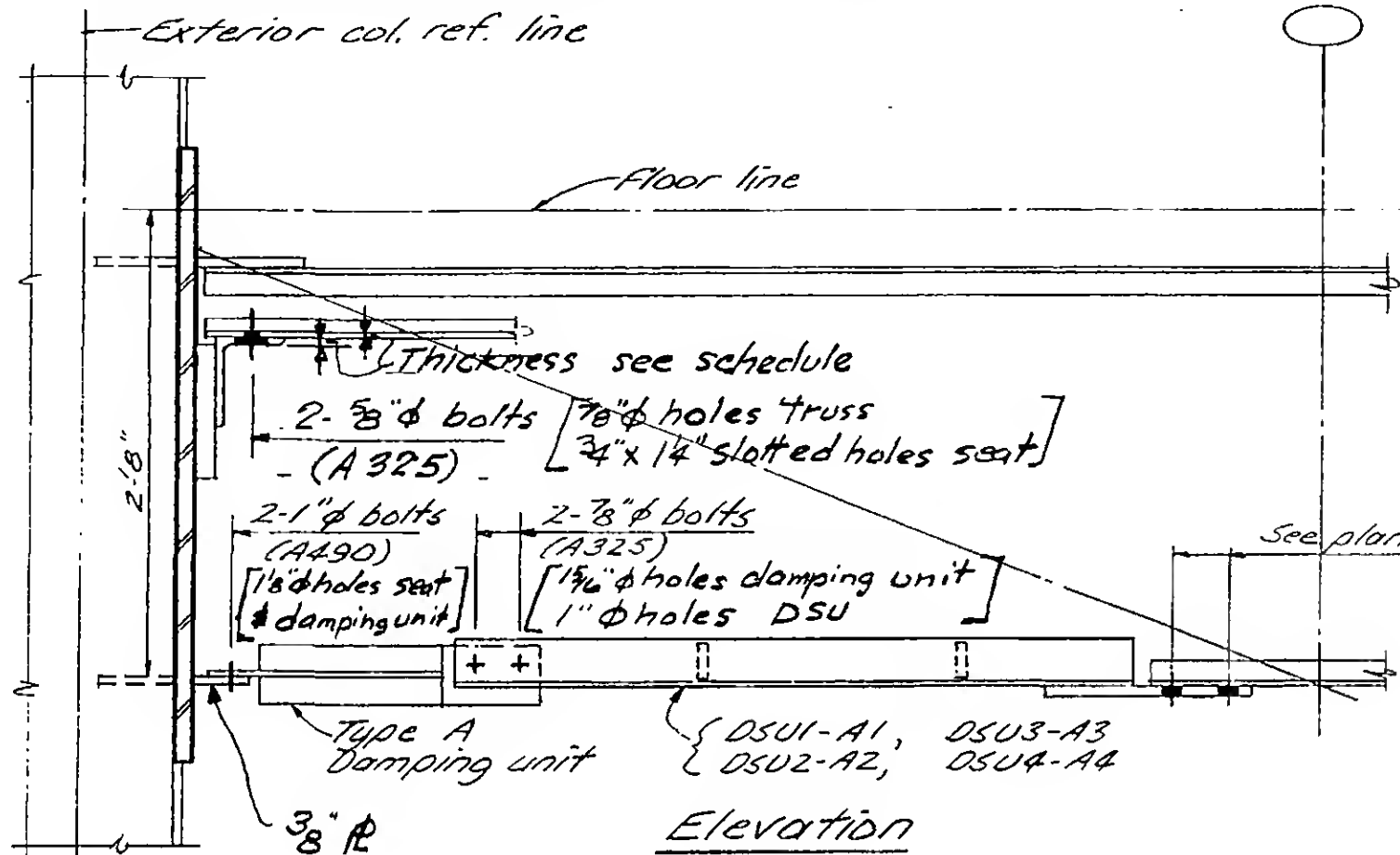
D-AB1-14.2

PROJECT THE WORLD TRADE CENTER

TITLE DETAIL A1, A2, A3, A4

DATE 3/10/69

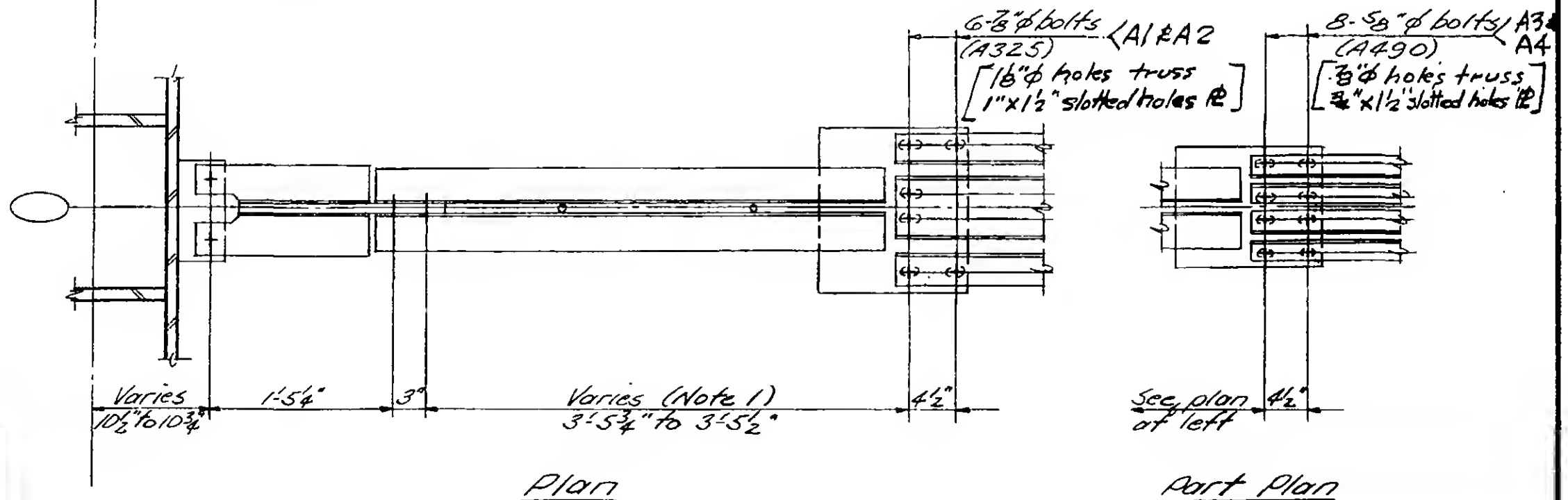
REVISIONS



Note 1: This dimension may vary by $\pm 1/2$ " erection tolerance from dimensions indicated.

SCHEDULE

Detail No.	Seat L thickness	Bearing L thick.
A1	5/8"	.25"
A1A	3/4"	.25"
A1B	5/8"	.37"
A2	5/8"	.25"
A2A	5/8"	.37"
A2B	3/4"	.37"
A3	1/2"	.25"
A3A	5/8"	.37"
A4	1/2"	.25"



DESIGNED

S. Kay

DRAWN

J. Adams

REVIEWED

W. Brewer

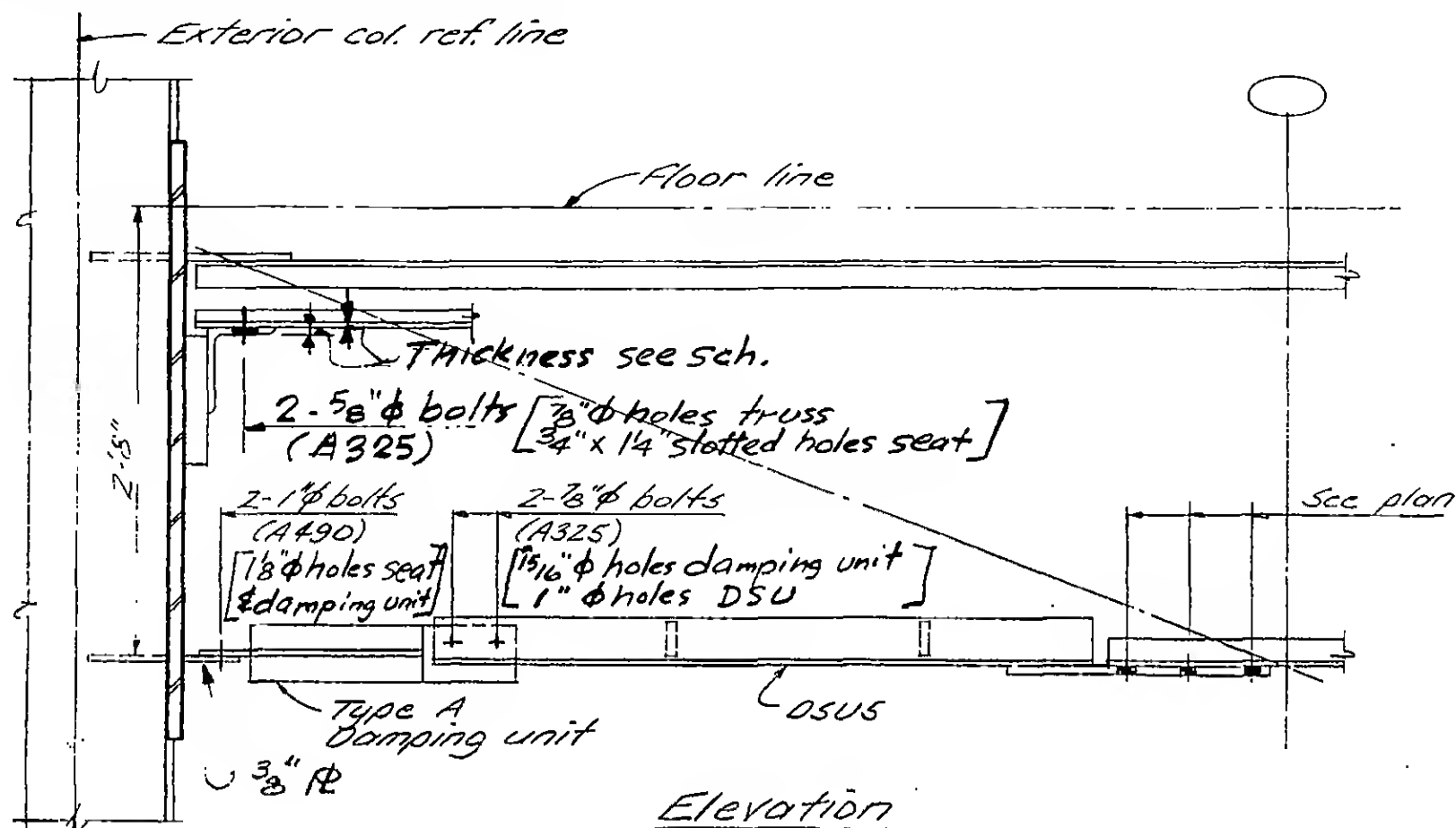
D-AB2-1

PROJECT THE WORLD TRADE CENTER

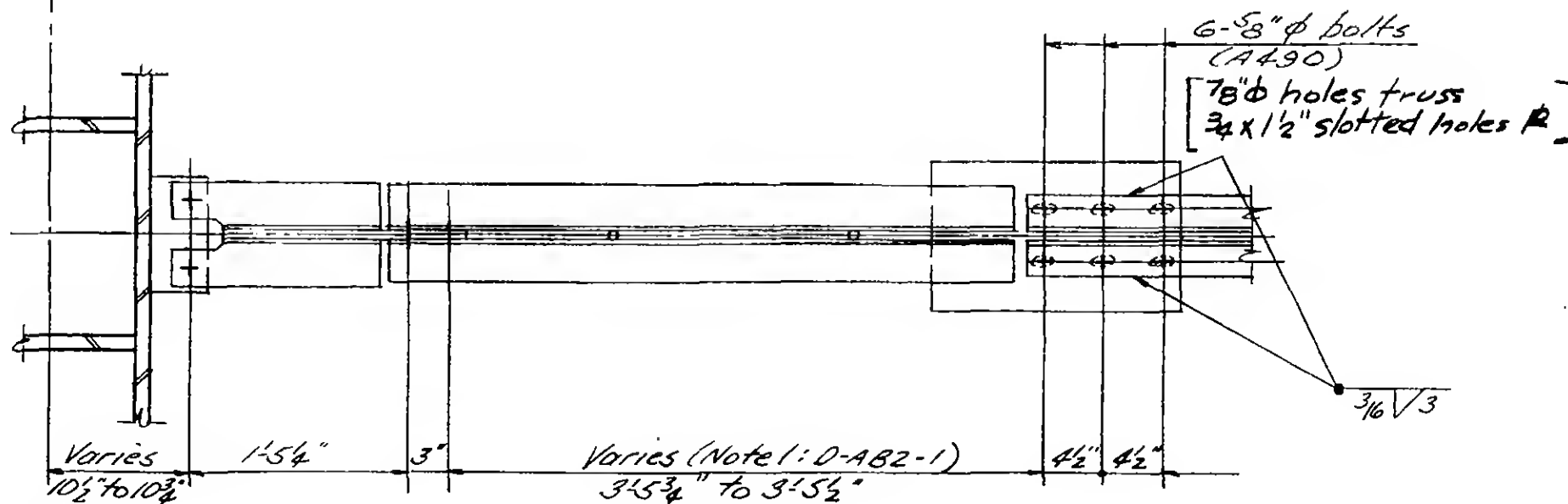
TITLE DETAIL A5

DATE 3/18/69

REVISIONS



SCHEDULE		
Detail No.	Seat L thick.	Bearing L thick.
A5	1/2"	.25"
A5A	5/8"	.37"



DESIGNED

S. Karp

DRAWN

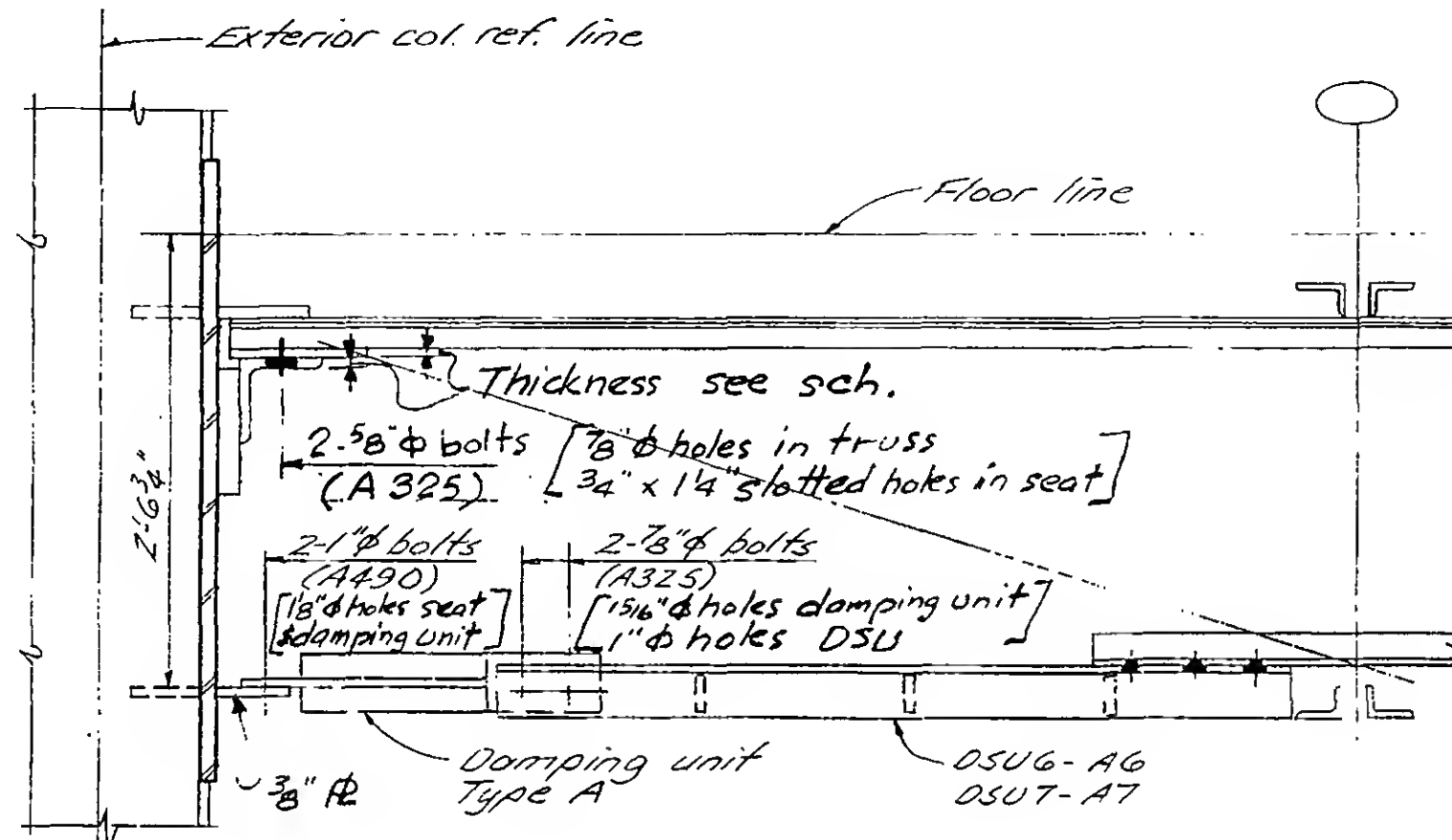
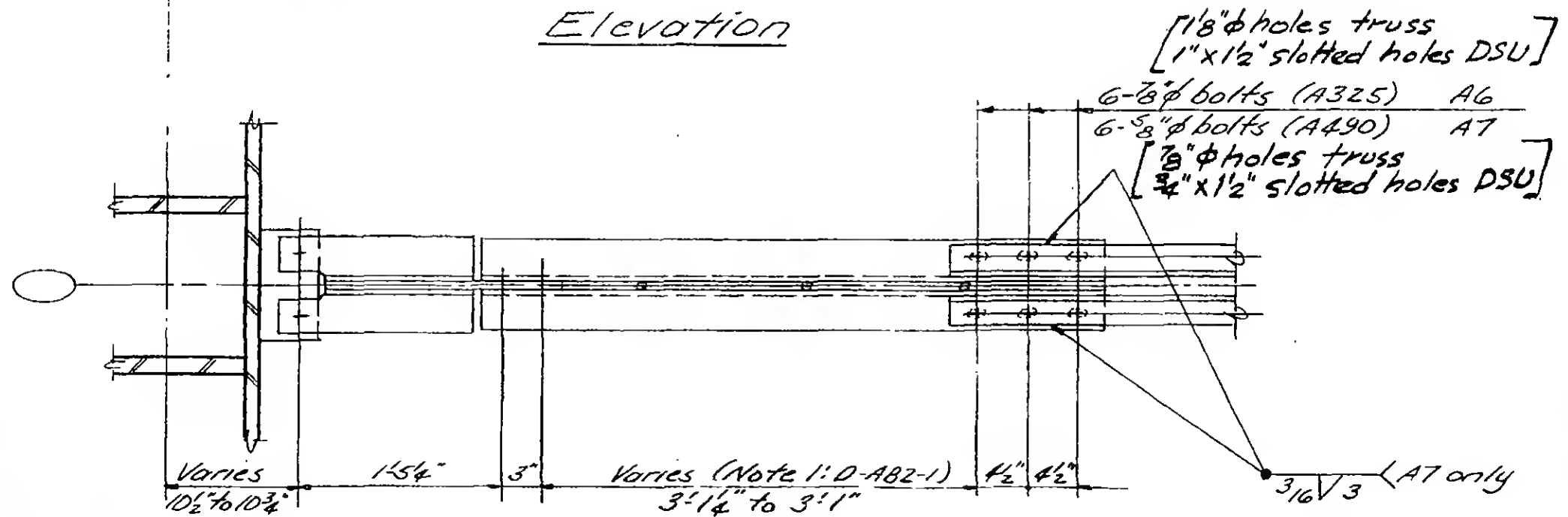
J. Adams

REVIEWED

W. Brewer

D-AB2-2

REVISIONS

ElevationPlan

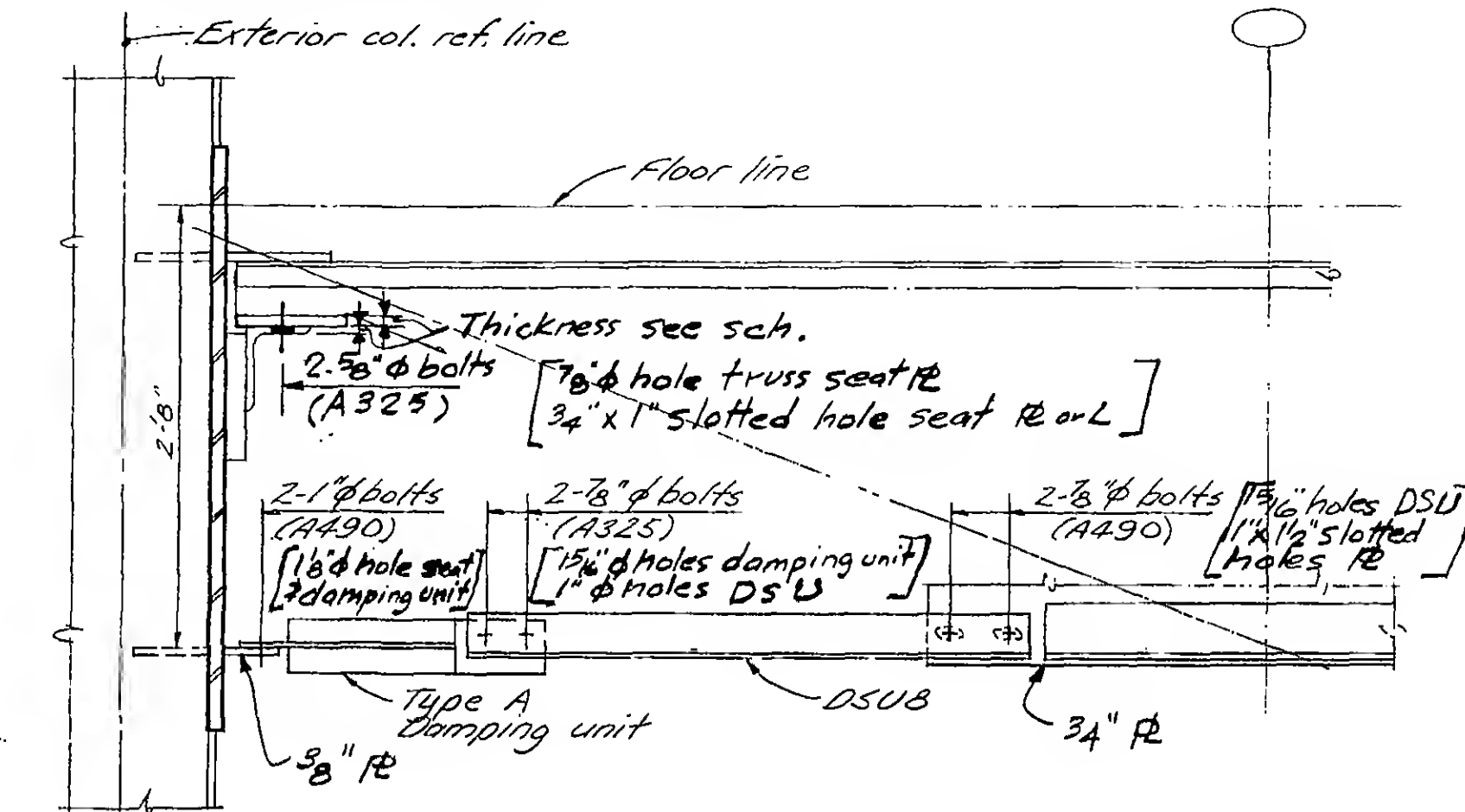
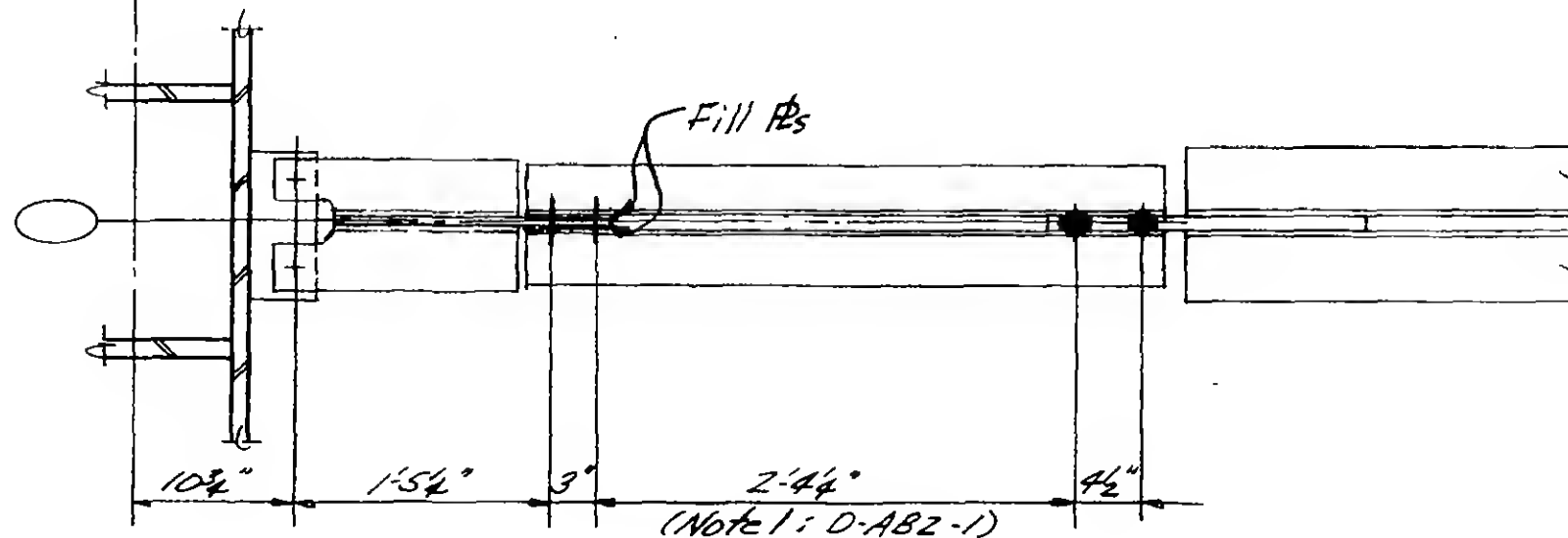
SCHEDULE		
Detail No	Seat L thick.	Bearing L thick.
A6	3/8"	.25
A6A	5/8"	.25
A7	1/2"	.25
A7A	5/8"	.25

DESIGNED
S. Karp
DRAWN
J. Adams

REVIEWED
W. Brewer

D-AB2-3

REVISIONS

ElevationPlan

SCHEDULE		
Detail No.	Seat ϕ or L	Truss Seat ϕ
AB	1"	3/4"
ABA	1/2"	1/2"
ABB	5/8"	1/2"
ABC	3/4"	1/2"

DESIGNED

S. Kay

DRAWN

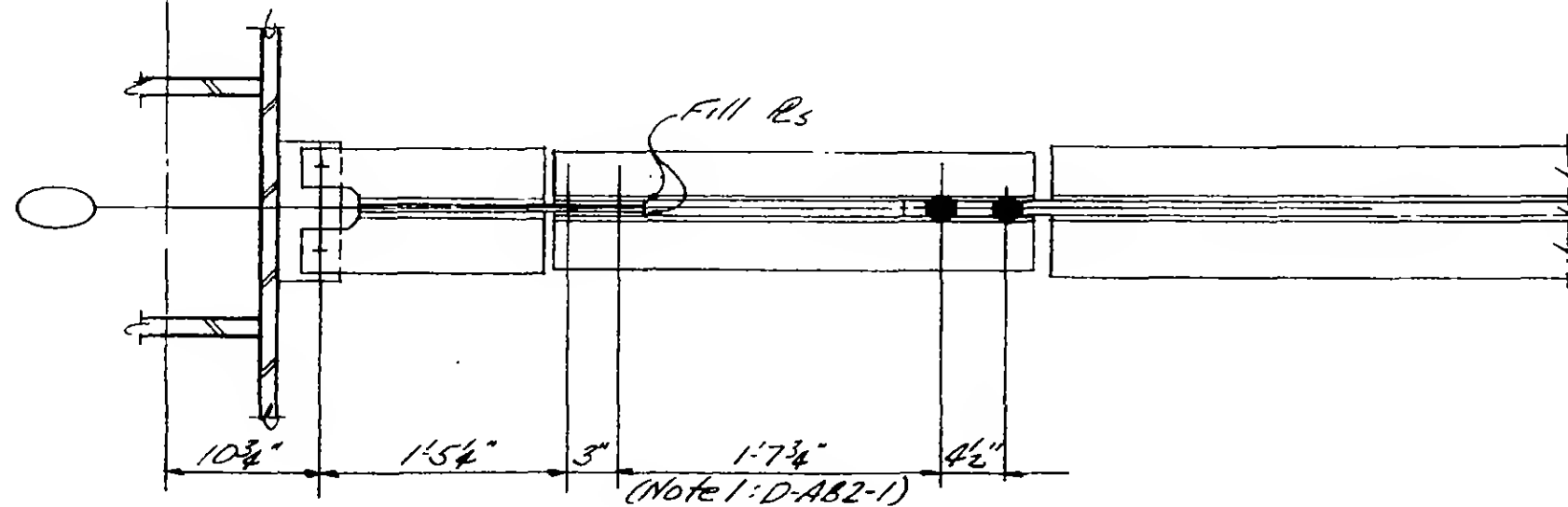
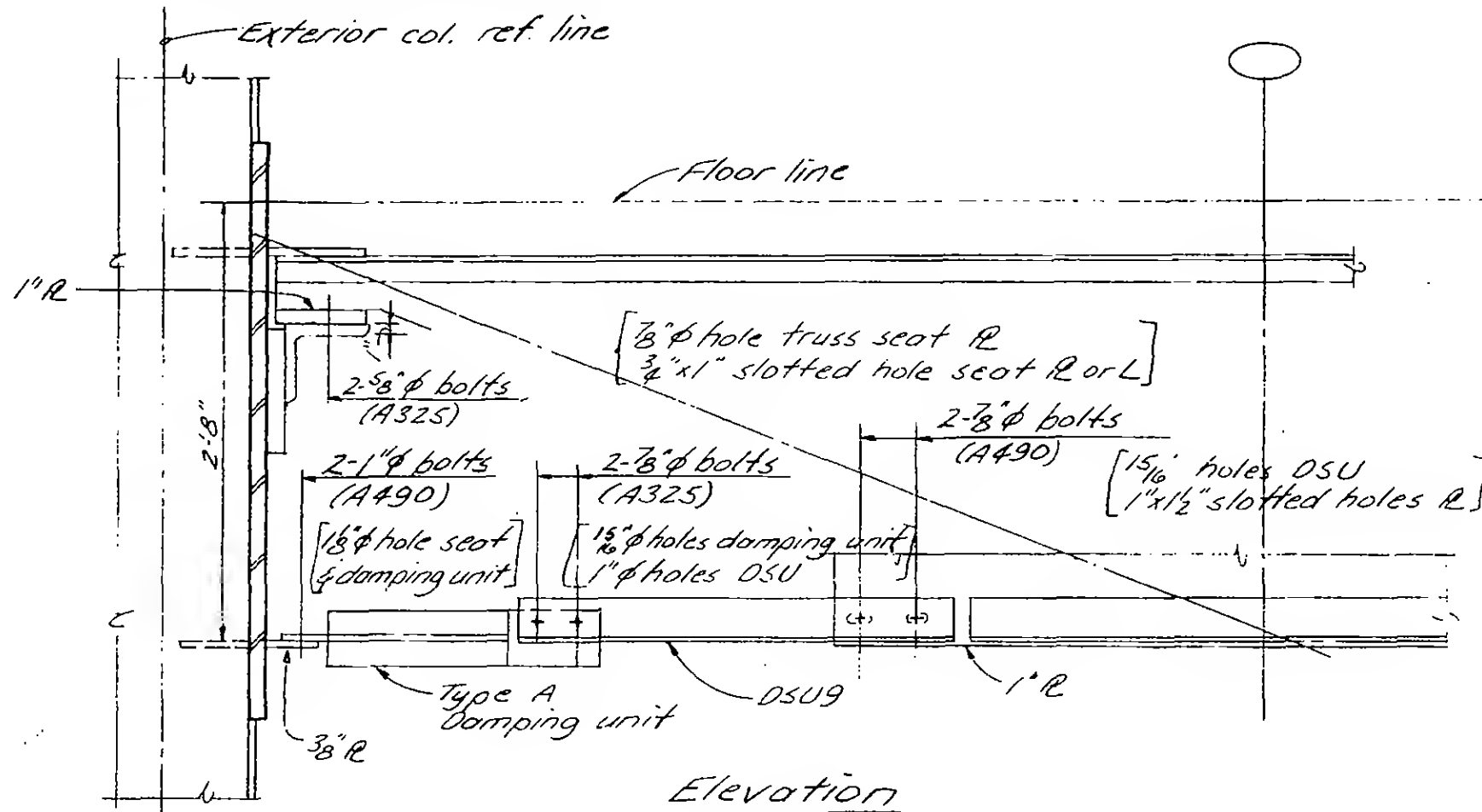
J. Adams

REVIEWED

W. Brewer

D-ABZ-4

REVISIONS



DESIGNED

S. Karp

DRAWN

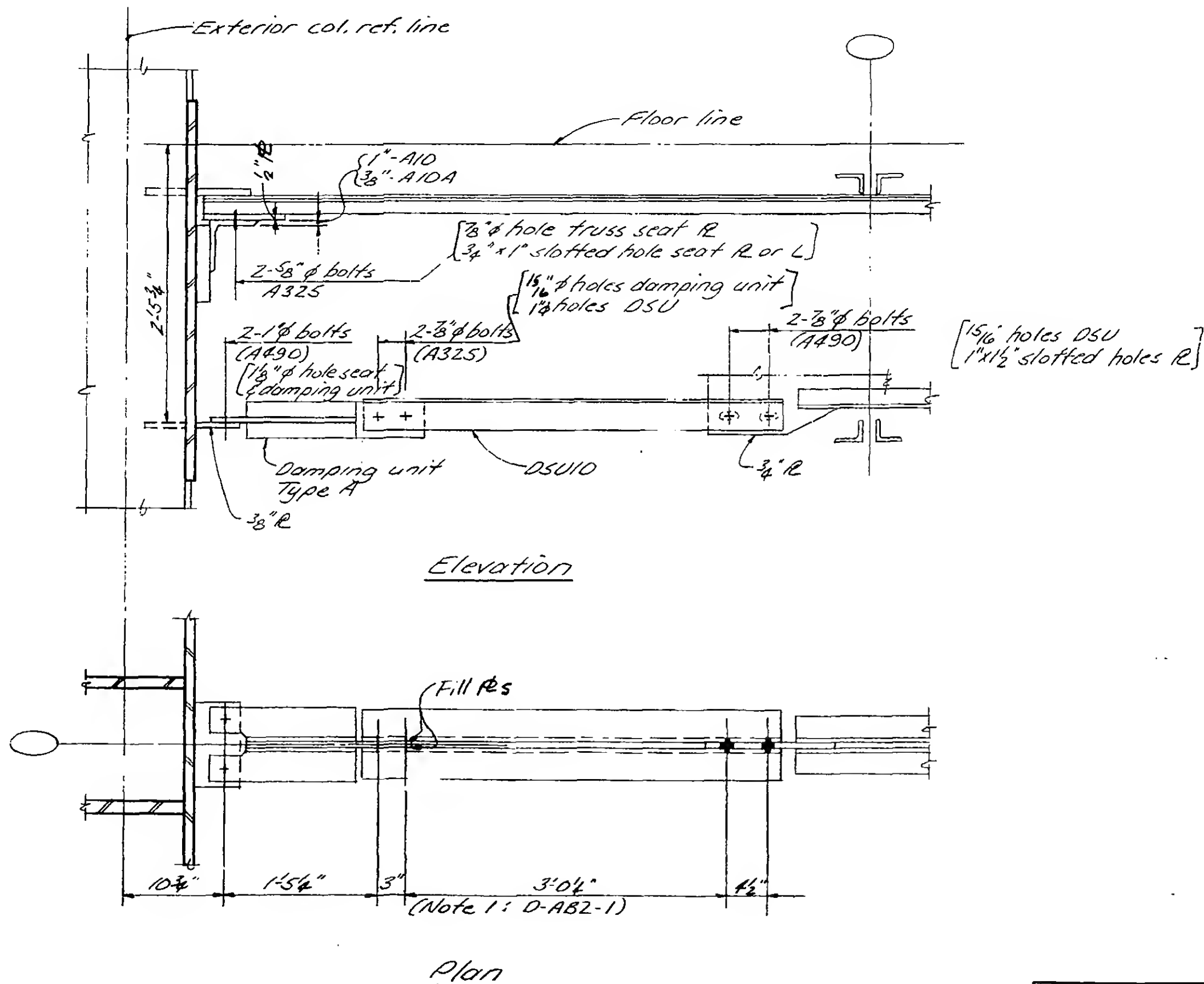
J. Adams

REVIEWED

W. Brewer

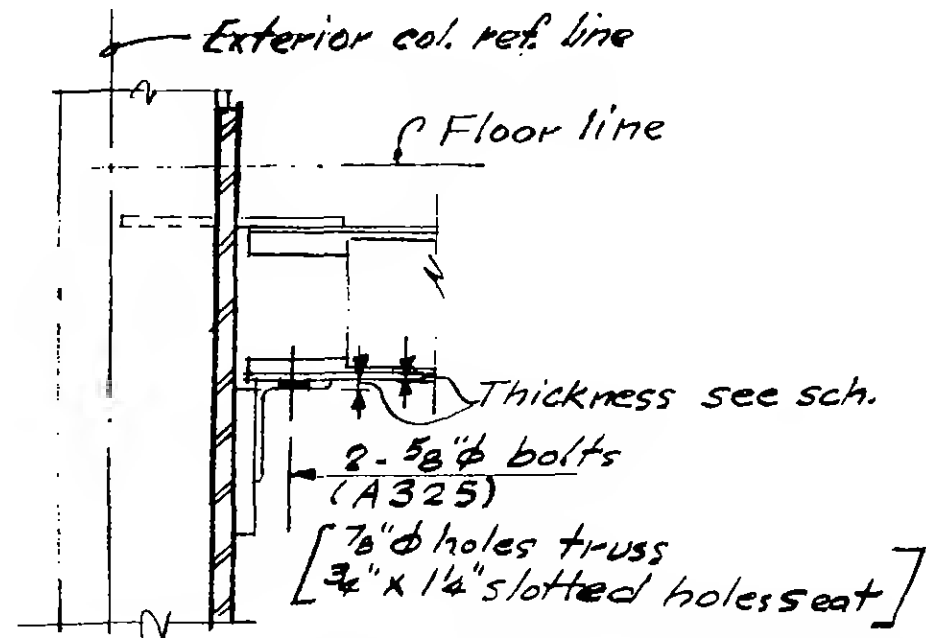
D-AB2-5

REVISIONS

DESIGNED
S. KarpDRAWN
J. AdamsREVIEWED
W. Brewer

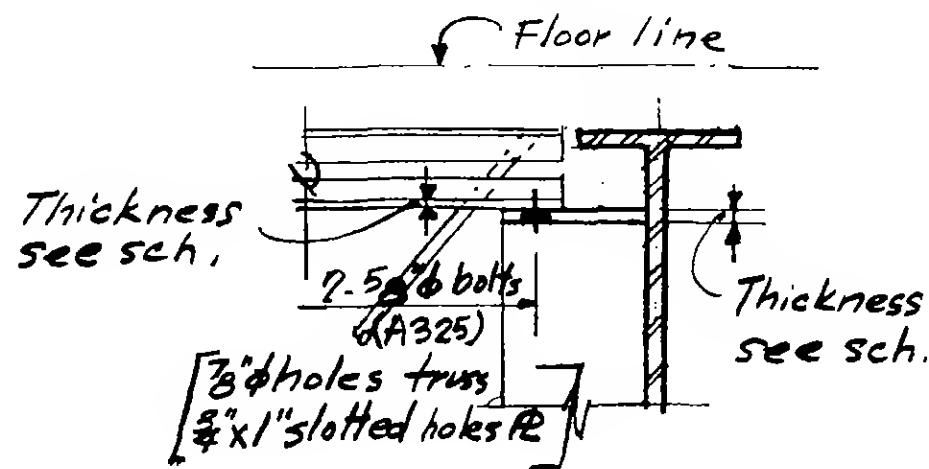
D-AB2-6

REVISIONS



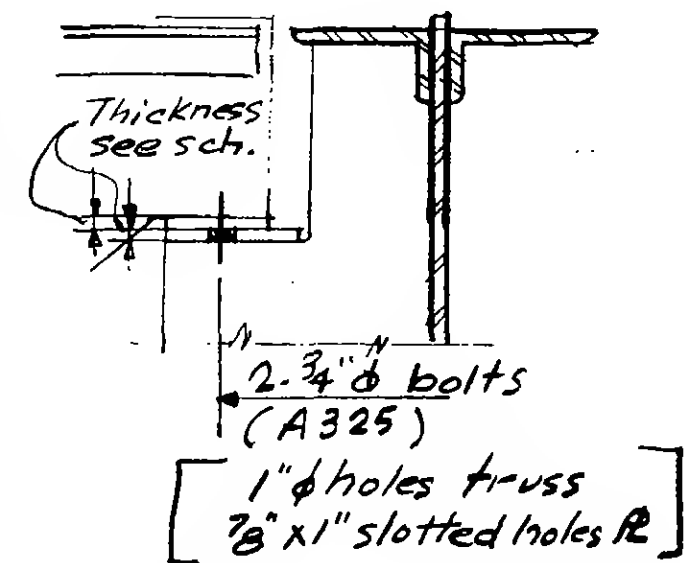
DETAIL A20-A23

SCHEDULE		
Detail No.	Seat L thick.	Bearing L thick.
A20	5/8"	.25"
A21	3/4"	.25"
A22	5/8"	.37"
A23	5/8"	.25"



DETAIL A30-A36

SCHEDULE		
Detail No.	Seat R thick.	Bearing L or R
A30	5/8"	.25"
A31	3/4"	.25"
A32	7/8"	.31"
A33	7/8"	.25"
A34	5/8"	.37"
A35	3/4"	.37"
A36	7/8"	.37"
A37	1"	3/4"
A38	3/4"	3/4"



DETAIL A37 & A38

DESIGNED

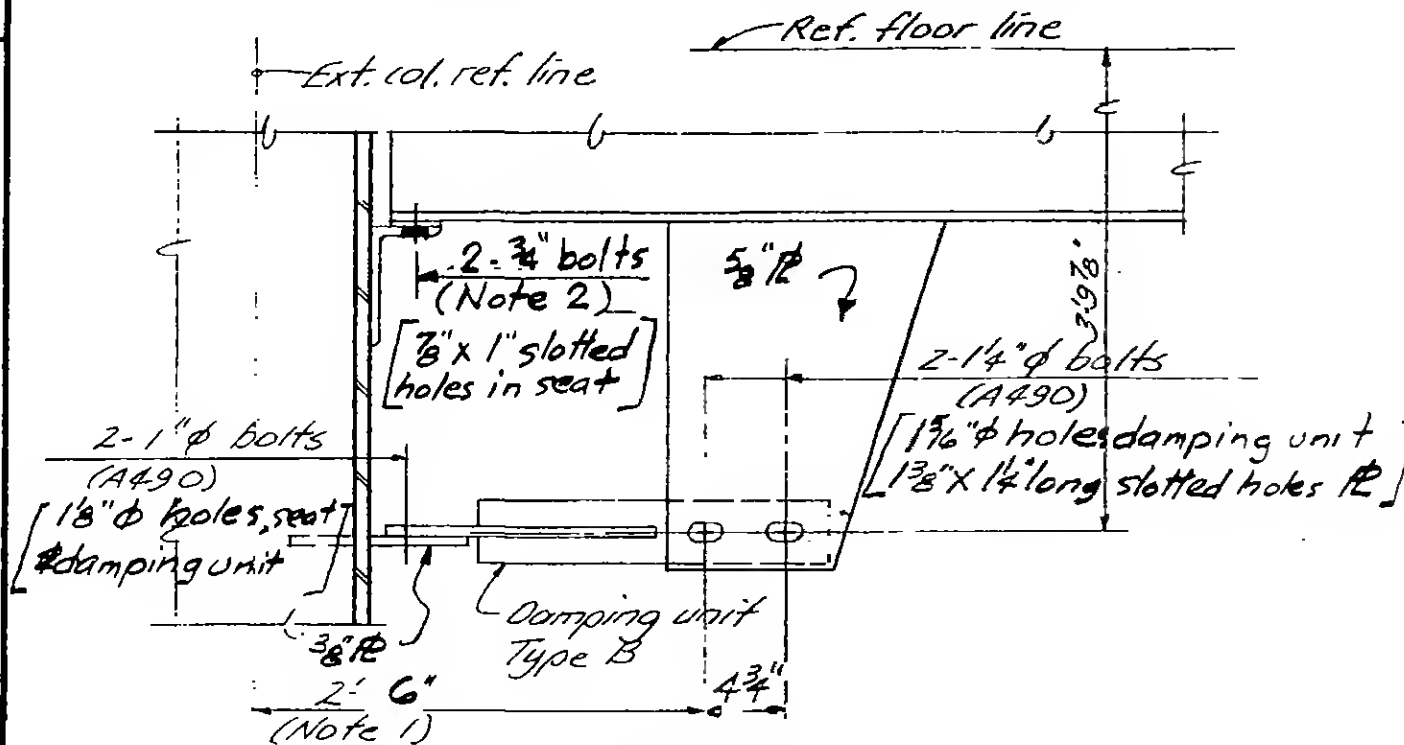
DRAWN

REVIEWED

W. Brewer

D-AB2-7

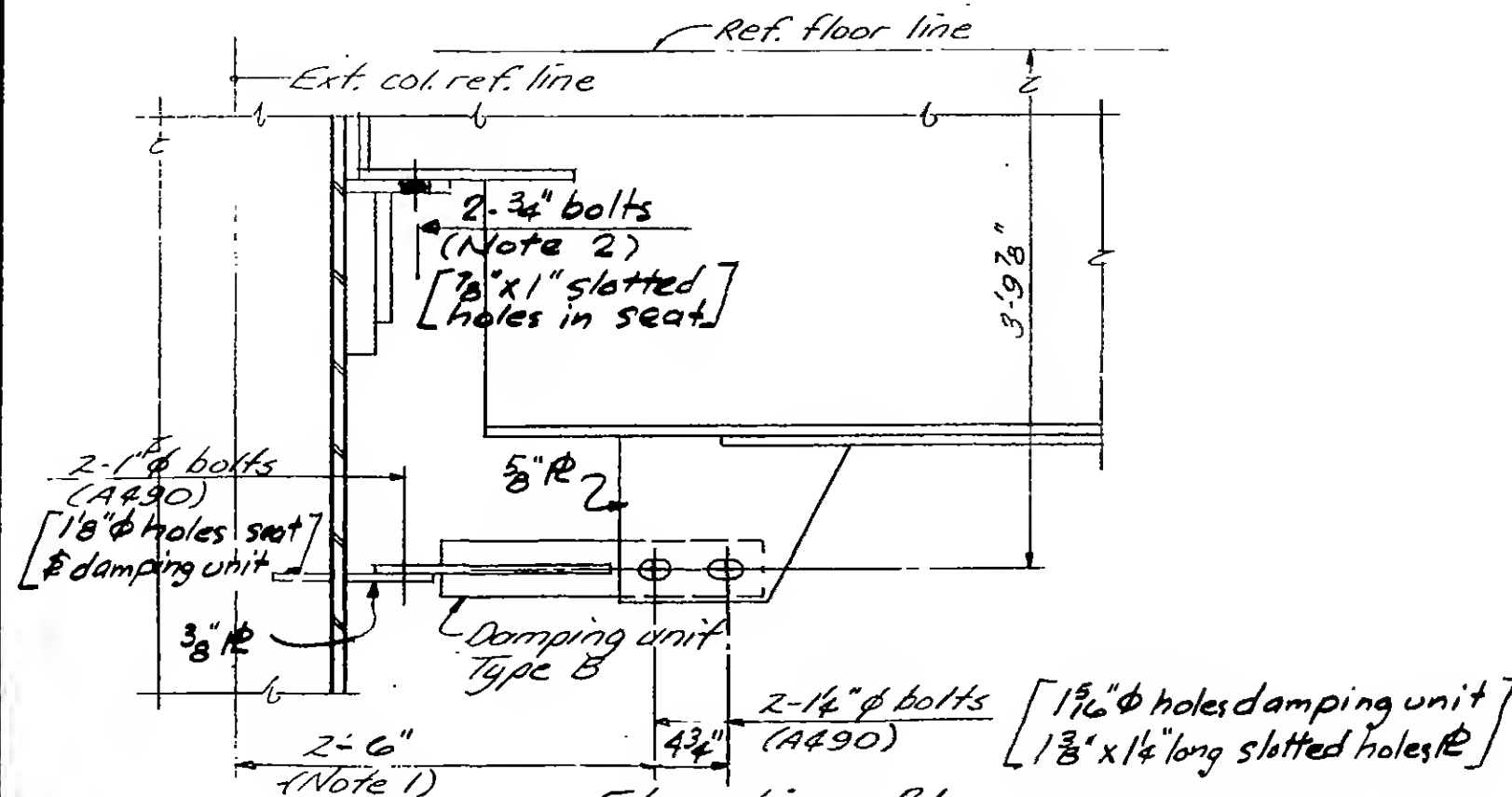
REVISIONS



Elevation B2

Note 1: This dimension may vary by $\pm 1/2$ " erection tolerance from dimension indicated.

Note 2: Bolts to be A307 or A325 hand tightened. If A325 are torqued, loosen after top R is welded & before concrete is cast.



Elevation B1

DESIGNED

S. Karp

DRAWN

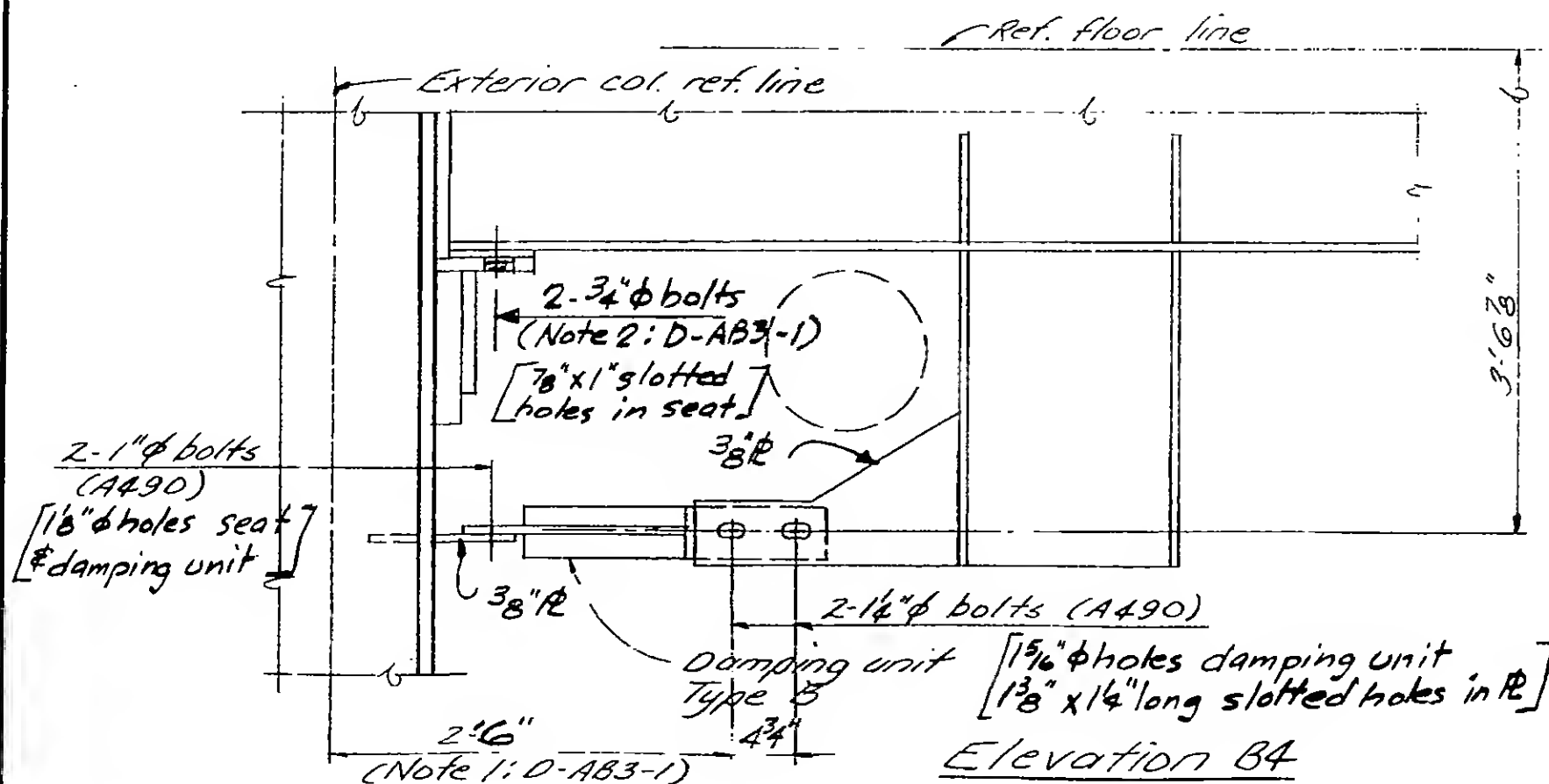
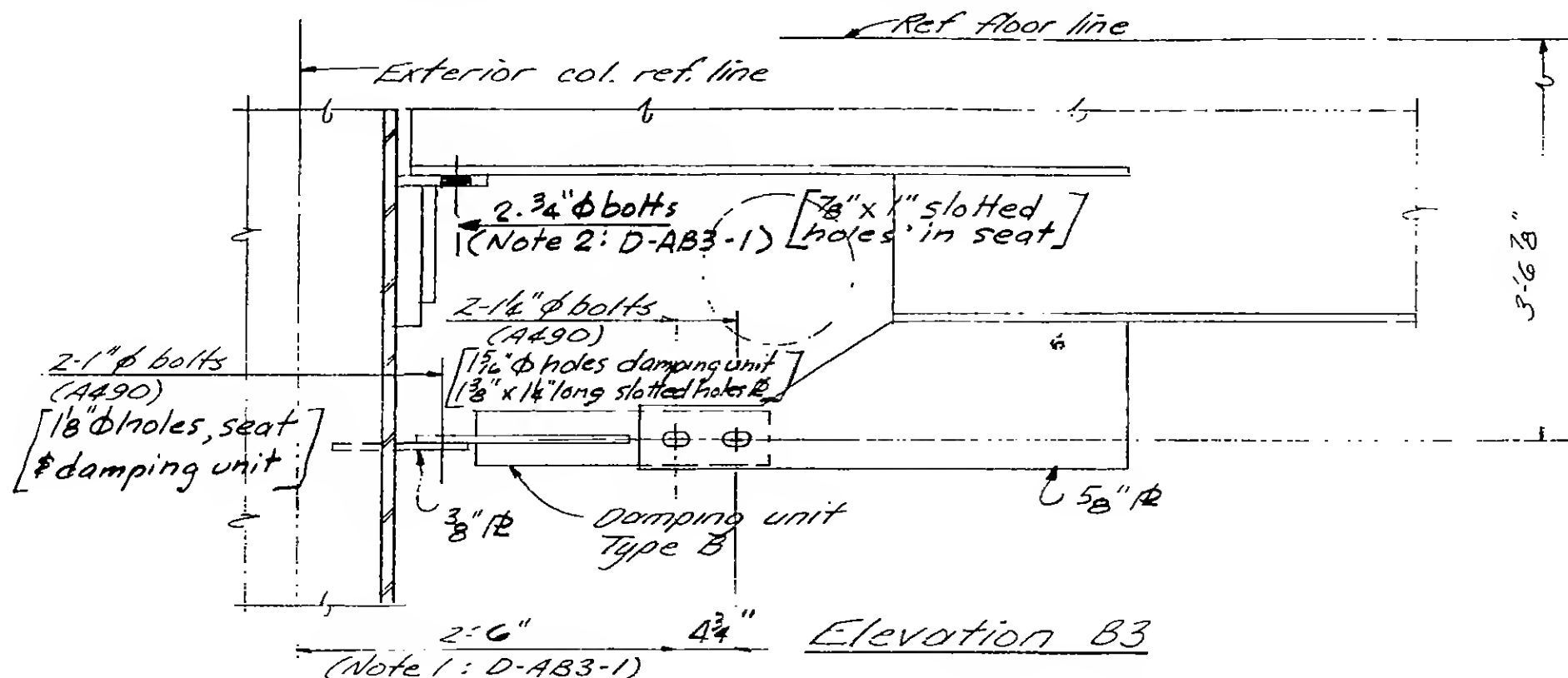
J. Adams

REVIEWED

W. Brewer

D-AB3-1

REVISIONS



DESIGNED

S. Kay

DRAWN

J. Adams

REVIEWED

W. Brewer

D-AB3-2

PROJECT

THE WORLD TRADE CENTER

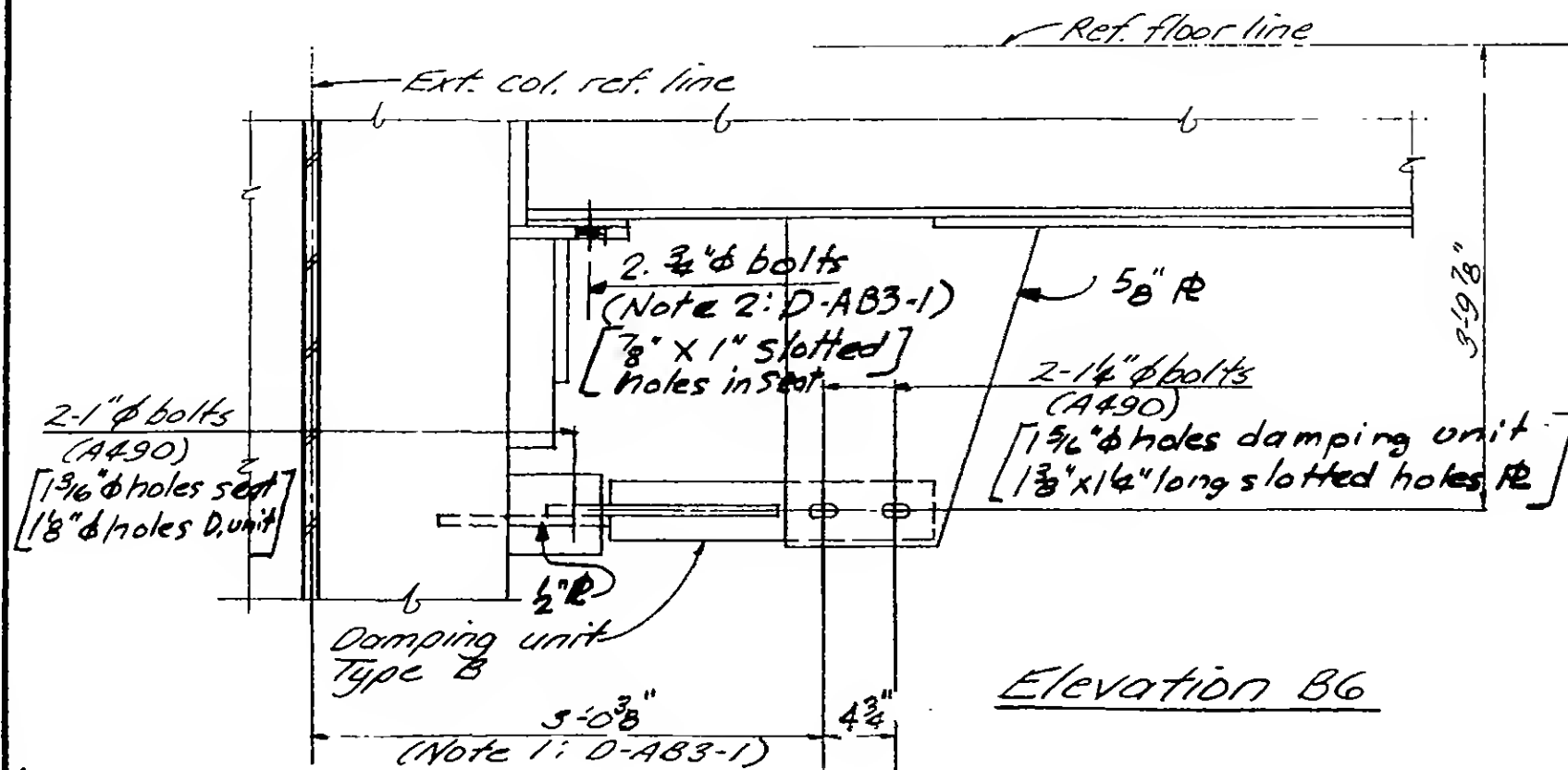
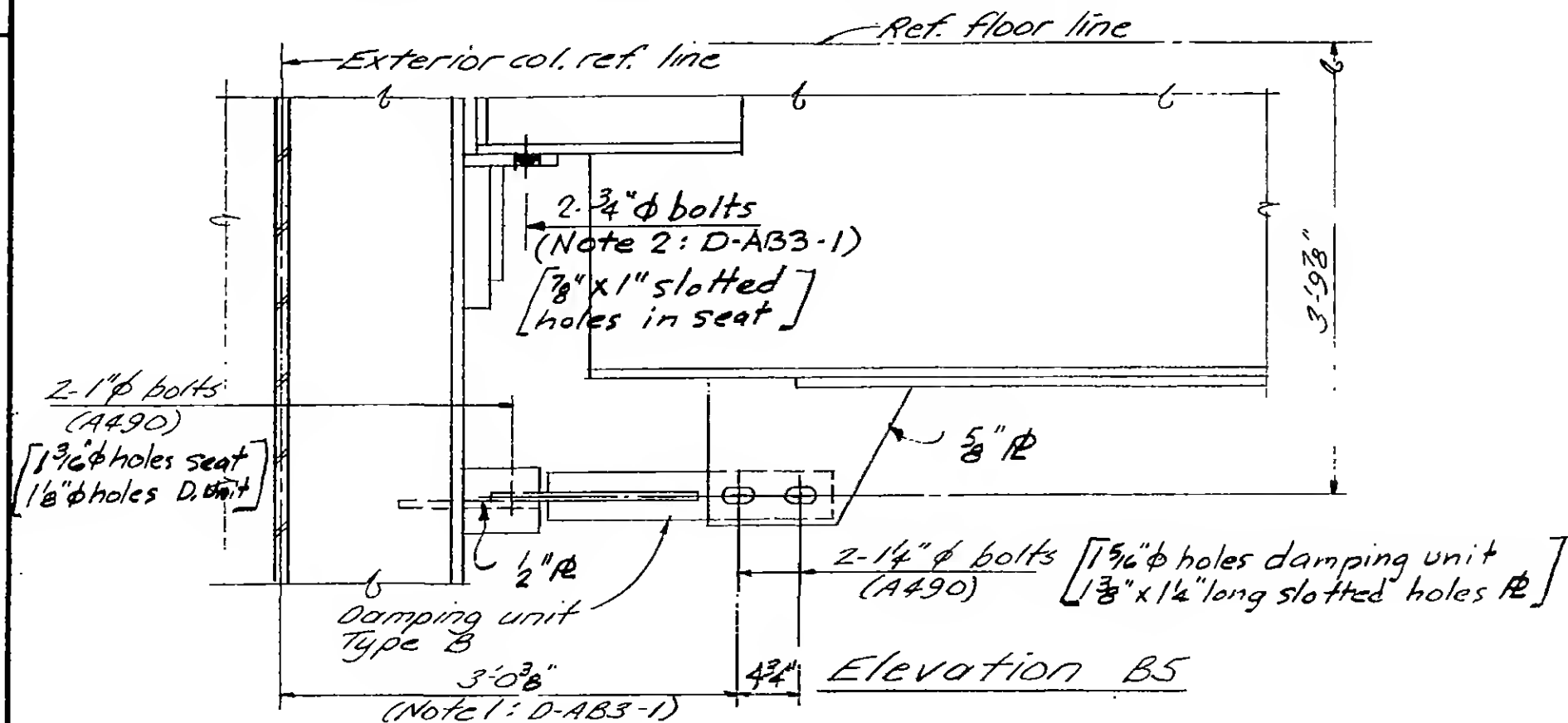
TITLE

DETAIL B5 & B6

DATE

3/18/69

REVISIONS



DESIGNED

S. Karp

DRAWN

J. Adams

REVIEWED

W. P. Brewster

D-AB3-3

PROJECT

THE WORLD TRADE CENTER

TITLE

DAMPING UNIT - STRUCTURAL TEES

DATE 9-16-66

REVISIONS

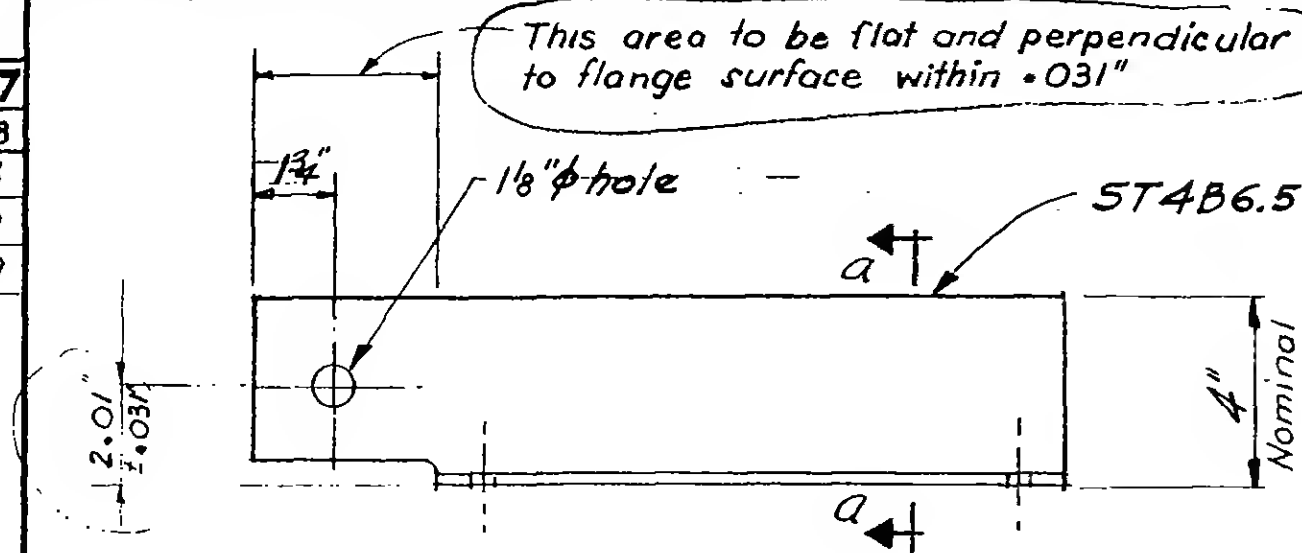
12-13-67

4-15-68

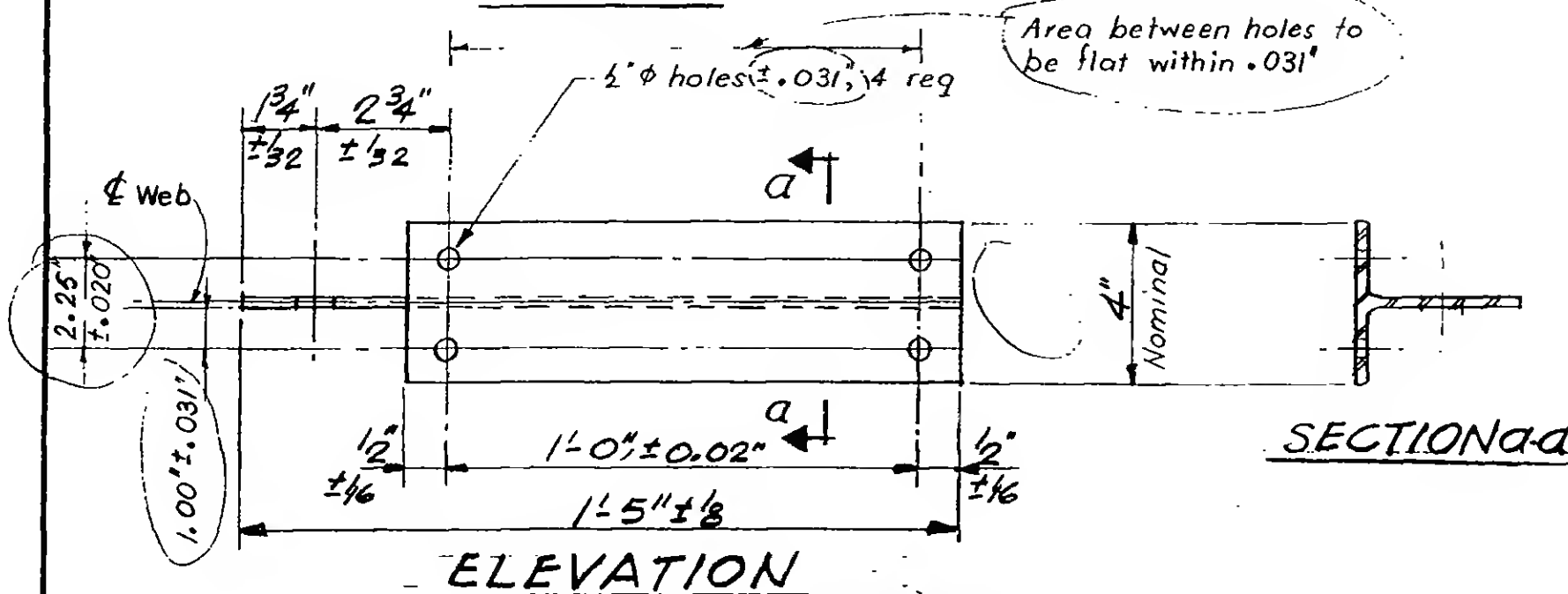
6-20-68

5-20-69

8-29-69



PLAN



ELEVATION

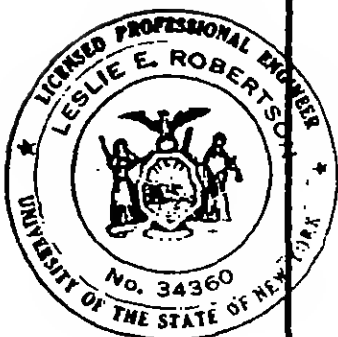
SECTION aa

SCHEDULE

TYPE	N ^o REQ'D TOWER A	N ^o REQ'D TOWER B	N ^o REQ'D FOR ACCEPTANCE TEST **	N ^o REQ'D FOR GUARANTEE TEST	2 TESTS TOTAL N ^o REQ'D	TOTAL *
A	17,926	17,928	440	720	720	37,734
B	1,496	1,496	40	None	60	3,092

* The Contractor of Contract WTC 219.00 to supply the number of units indicated in this column.

** This is the minimum required for lots which are accepted after the first sample of each lot.



DA-1

REVISIONS

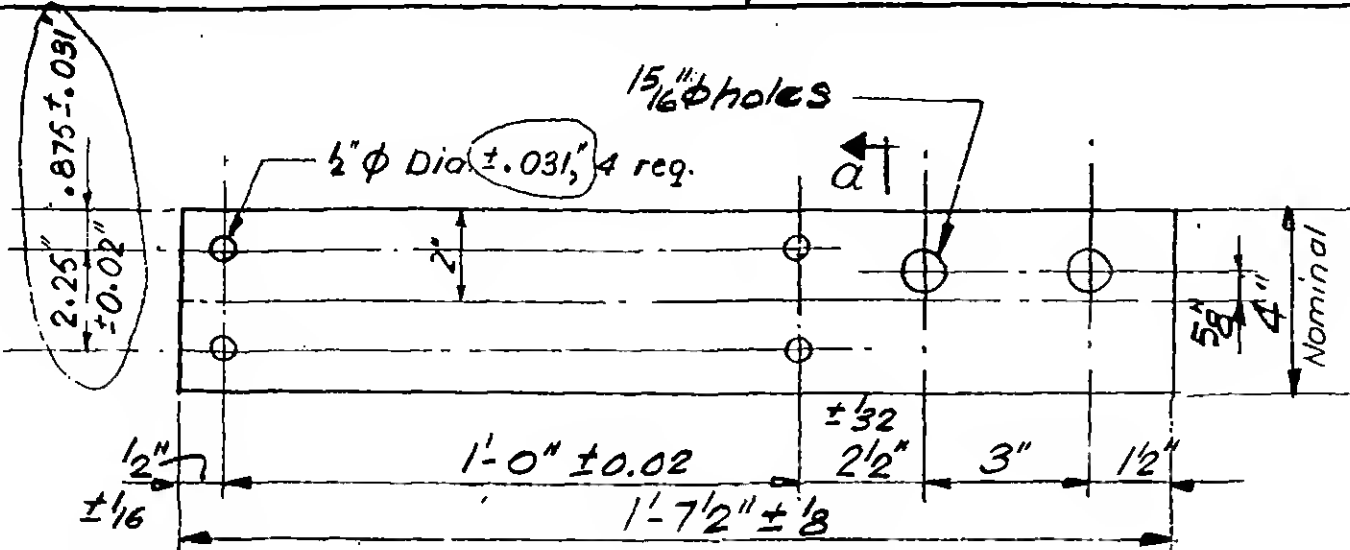
12-13-67

4-15-68

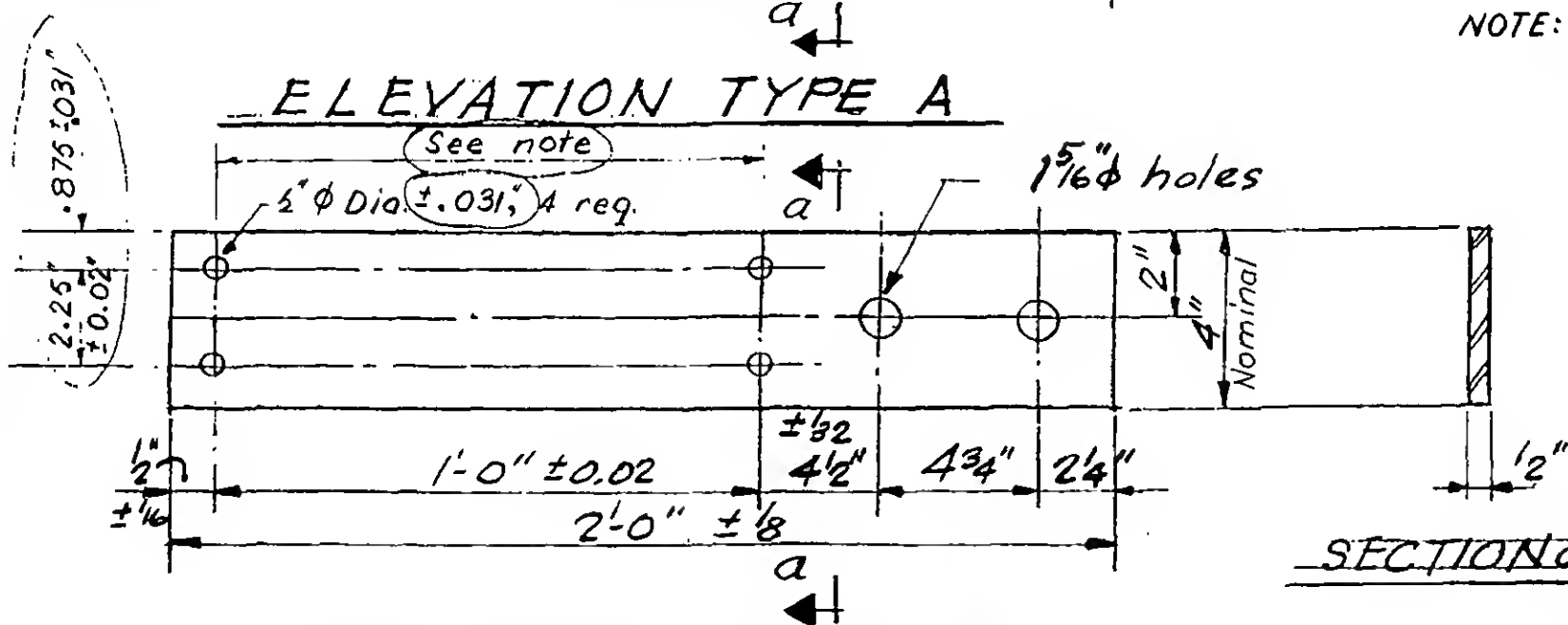
6-20-68

5-20-69

8-29-69



ELEVATION TYPE A



ELEVATION TYPE B

NOTE: Area between the 1/2" Diam. holes to be flat both sides within .031"

SECTION a-a

SCHEDULE

SCHEDULE						
TYPE	NO REQ'D TOWER A	NO REQ'D TOWER B	NO REQ'D FOR ACCEPTANCE TEST **	NO REQ'D FOR GUARANTEE TEST	2% OVERAGE OVERAGE	TOTAL * INS REQ'D.
A	8,963	8,964	220	360	360	18,867
B	748	748	20	None	30	1,546

* The Contractor of Contract 219.00 to supply the number of units indicated in this column.

** This is the minimum required for lots which are accepted after the first sample of each lot.



PROJECT THE WORLD TRADE CENTER

TITLE VISCOELASTIC DAMPING UNIT

DATE 10-27-67

REVISIONS

1-25-68

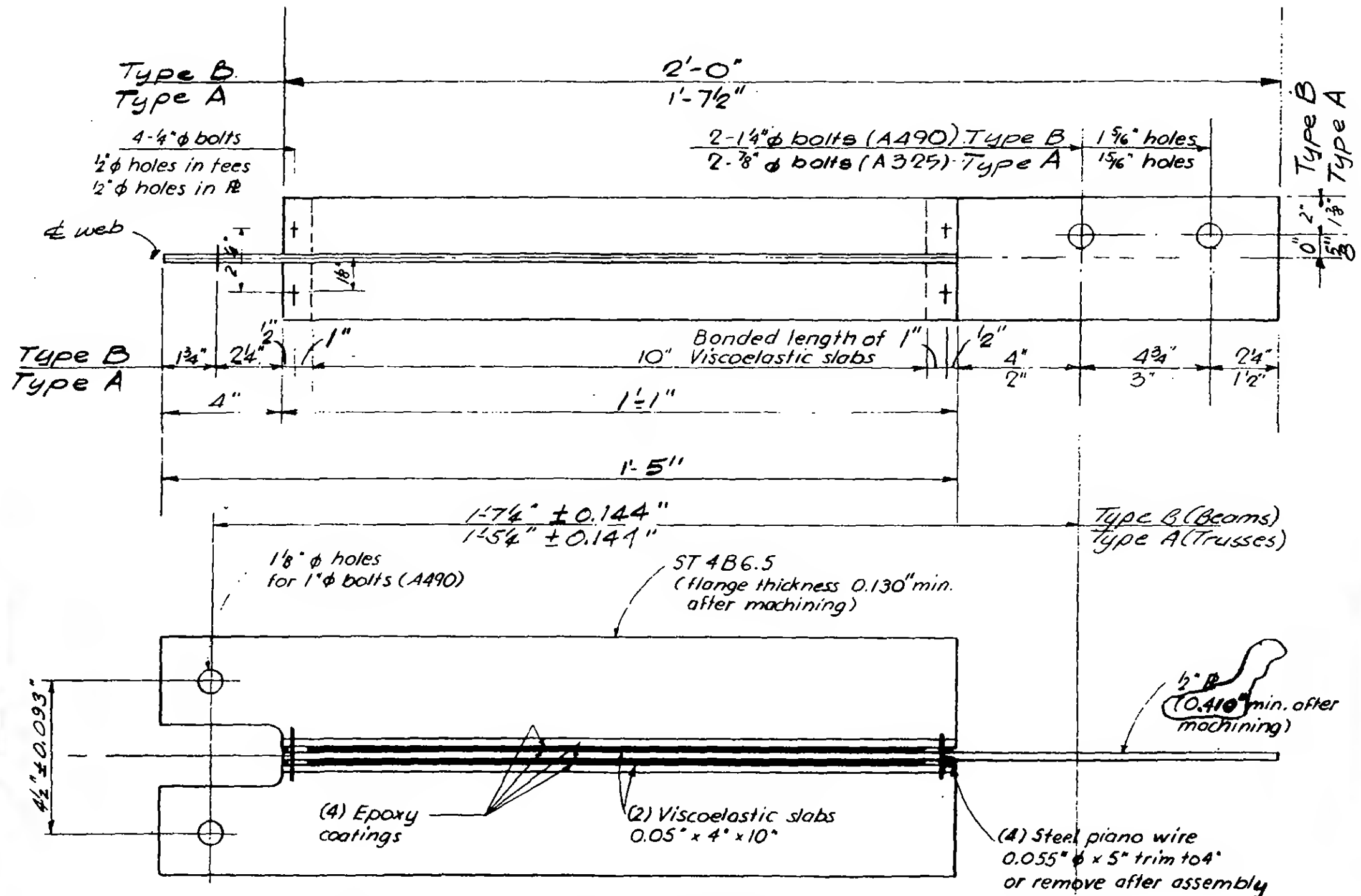
4-15-68

6-20-68

5-20-69

8-29-69

5-21-70



Type	NO REQ'D TOWER A	NO REQ'D TOWER B	APPROX. NO. REQ'D FOR ULTIMATE STRENGTH ACCEPTANCE TEST	NO REQ'D FOR 5-YEAR TEST	TOTAL NO REQ'D *
A	8963	8964	452	224	18,603
B	748	748	38	None	1,534

* The Contractor of Contract 224.00 to supply the number of units in this column.



SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE CORE TRUSS SEATS KEY PLAN

DATE 3-18-69

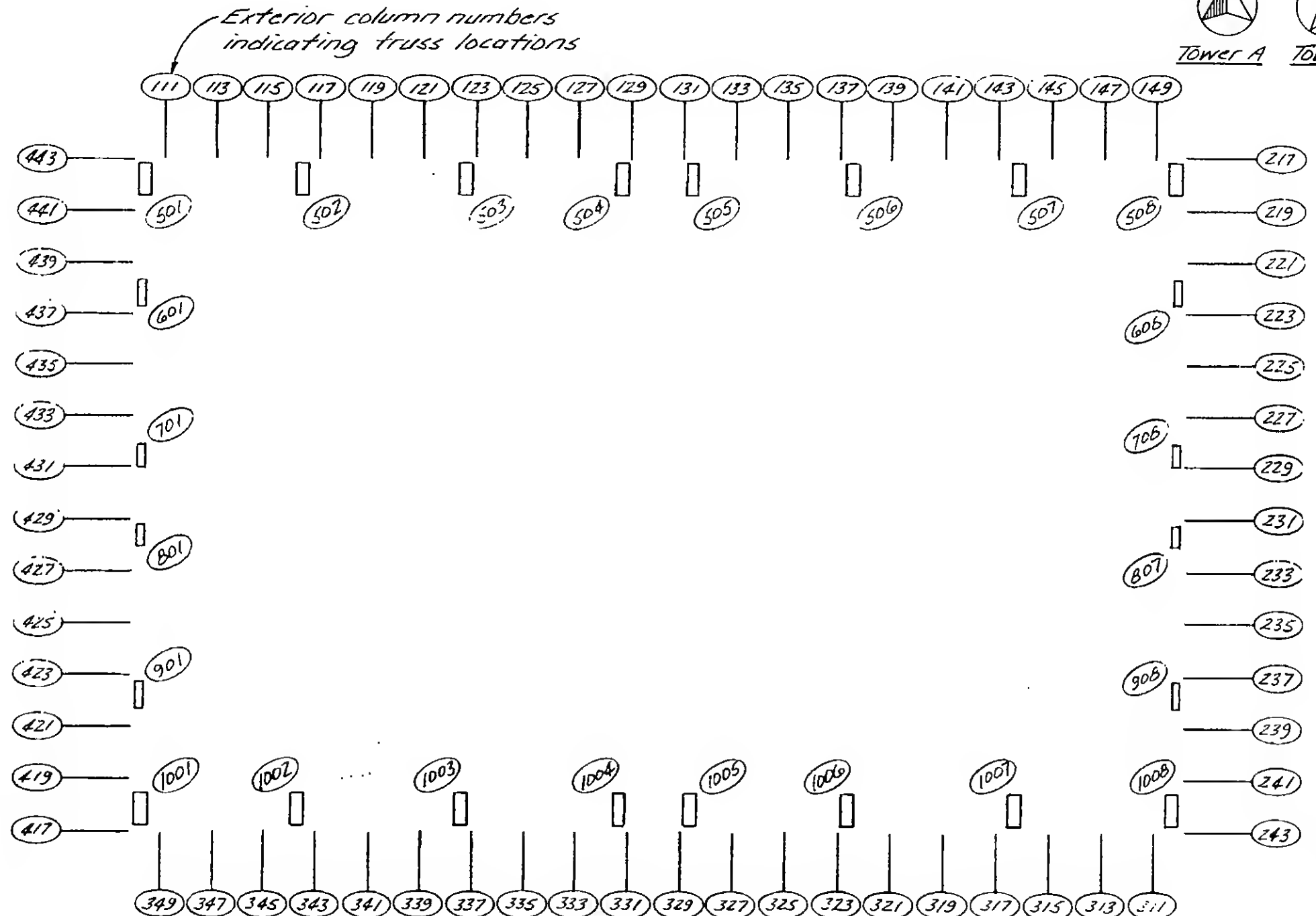
REVISIONS

NORTH



NORTH

Tower A Tower B



DESIGNED

DRAWN

J. Adams

REVIEWED

W. Brewer

D-AB4-1

SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

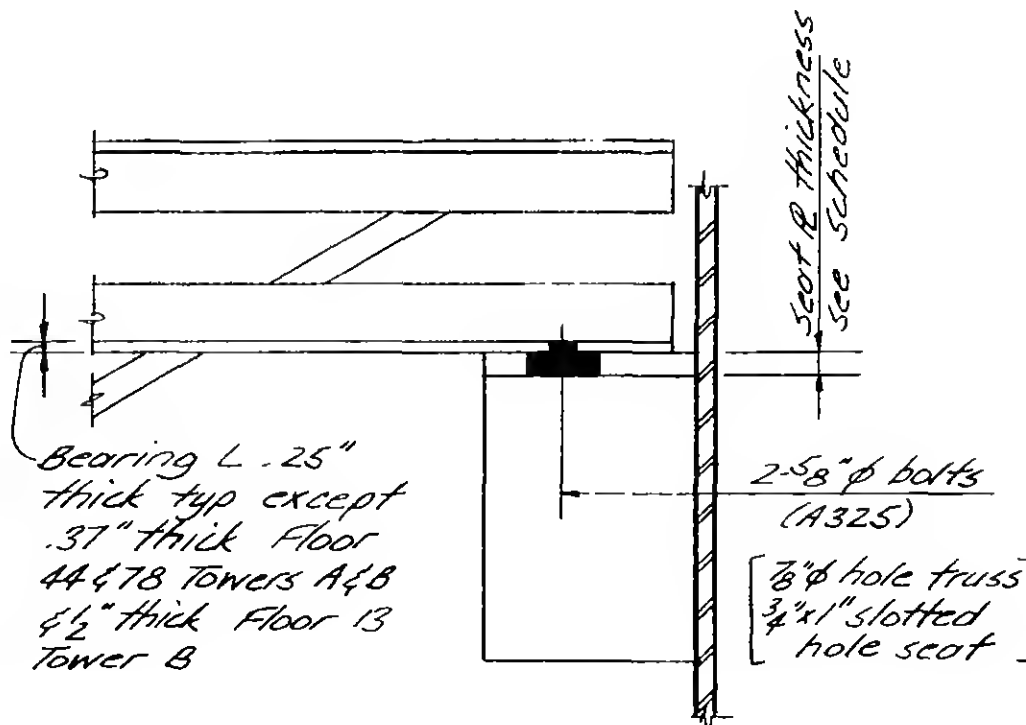
TITLE CORE TRUSS SEAT PLATE THICKNESS SCHEDULE

DATE 3-18-69

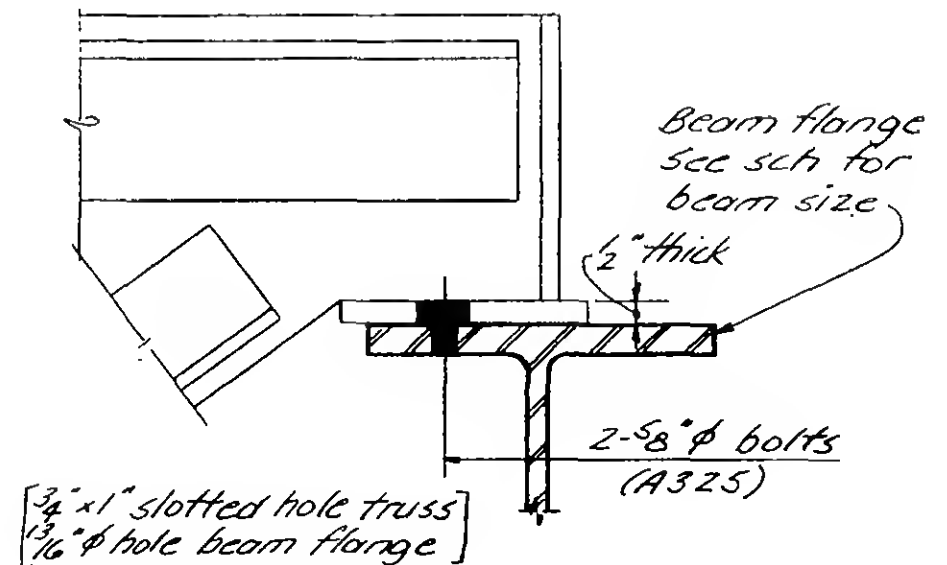
REVISIONS

Exterior Floor	Col. No.	111	113	115	117	119	121	123	125	127	129	131	133	135	137	139	141	143	145	147	149
*10-40		58	58	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	58	58
44		34	34	58	58	58	58	-	-	-	-	-	-	-	-	58	58	58	58	34	34
45		58	58	1/2	1/2	1/2	1/2	-	-	-	-	-	-	-	-	1/2	1/2	1/2	1/2	58	58
46-74		58	58	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	58	58
78		34	34	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	34	34
79-82		58	58	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	58	58
83-91		1/2	1/2	1/2	1/2	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	1/2	1/2	1/2	1/2
92		1/2	1/2	1/2	1/2	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	34
93-106		1/2	1/2	1/2	1/2	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	1/2	1/2	1/2	1/2
10 Tower B		2ANF42	2ANF42	2ANF42	2ANF42	2ANF68	2ANF68	18NF114	18NF114	18NF114	21NF55	21NF55	21NF82	21NF82	21NF82	21NF82	21NF68	21NF112	21NF112	21NF112	21NF112
11 Tower B		2ANF110	2ANF110	2ANF110	2ANF110	2ANF68	2ANF68	30NF124	30NF124	30NF124	2ANF68	2ANF68	2ANF76	2ANF76	2ANF76	2ANF76	2ANF68	2ANF110	2ANF110	2ANF110	2ANF110
12 Tower B		2ANF120	2ANF120	2ANF120	2ANF120	2ANF68	2ANF68	30NF124	30NF124	30NF124	2ANF68	2ANF68	2ANF76	2ANF76	2ANF76	2ANF76	2ANF68	2ANF110	2ANF110	2ANF110	2ANF110

* 13-33 Tower B



TYPICAL DETAIL

Floors 10-106 Tower A
Floors 13-106 Tower B

TYPICAL DETAIL

Floors 10, 11 & 12 Tower B



DESIGNED

DRAWN

J. Adams

REVIEWED

W. Brewer

D-ABA-2

SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE CORE TRUSS SEAT PLATE THICKNESS SCHEDULE

DATE 3-18-69

REVISIONS

Exterior Floor Col. No.	217	219	221	223	225	227	229	231	233	235	237	239	241	243					
*10-17	3/4	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/4					
18	3/4	3/8	3/8	1/2	1/2	1/2	1/2	1/2	3/8	3/8	3/8	3/8	3/8	3/4					
19-40	3/4	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/4					
44-45	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
46	3/4	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	-	-	-	-					
47	3/4	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1/2	1/2	-	-	-	-					
48-49	3/4	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	-	-	-	-					
50-55	3/4	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/4					
56	3/4	3/8	3/8	1/2	1/2	1/2	1/2	1/2	3/8	3/8	3/8	3/8	3/8	3/4					
57-74	3/4	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/4					
78-79	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
80	-	-	-	-	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/4					
81	-	-	-	-	1/2	1/2	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/4					
82-83	-	-	-	-	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/4					
84-87	3/4	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/4					
88	3/4	3/8	3/8	3/8	3/8	3/8	1/2	1/2	1/2	1/2	1/2	3/8	3/8	3/4					
89-106	3/4	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/4					
	217	219	221	223	225	227	229	231	232	233	234	235	237	239	241	243			
10 Tower B	24I100	24I100	24I100	24I100	24I100	24I100	24I799	-	24I100	-	24I100	-	24I100	24I100	24I100	24I100			
11 Tower B	24I799	24I799	24I799	24I799	24I799	24I799	24I799	24I799	-	24I799	-	24I799	24I799	24I799	24I799	24I799			
12 Tower B	24I100	24I100	24I100	24I100	24I100	24I100	24I799	-	24I100	-	24I100	-	24I100	24I100	24I100	24I100			

* 13 to 17 Tower B

See D-AB4-2 for typical details



DESIGNED

DRAWN

J. Adams

REVIEWED

W. Brewer

D-AB4-3

SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

Structural & Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE CORE TRUSS SEAT PLATE THICKNESS SCHEDULE

DATE 3-18-69

REVISIONS

FLOOR	Exterior Col. No.	311	313	315	317	319	321	323	325	327	329	331	333	335	337	339	341	343	345	347	349
*10-40		58	58	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	58	58
44		34	34	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	34	34
45-48		58	58	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	58	58
49-58		1/2	1/2	1/2	1/2	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	1/2	1/2	1/2	1/2
59		1/2	1/2	1/2	1/2	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	34
60-74		1/2	1/2	1/2	1/2	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	1/2	1/2	1/2	1/2
78		34	34	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	34	34
79-91		1/2	1/2	1/2	1/2	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	1/2	1/2	1/2	1/2
92		1/2	1/2	1/2	1/2	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	34
93-106		1/2	1/2	1/2	1/2	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	1/2	1/2	1/2	1/2
10 Tower B		21WF12	21WF12	21WF12	21WF12	21WF68	21WF68	18WF14	18WF14	18WF14	21WF55	21WF55	21WF82	21WF82	21WF82	21WF82	21WF68	21WF42	21WF42	21WF42	21WF42
11 Tower B		24WF10	24WF10	24WF10	24WF10	24WF68	24WF68	30WF24	30WF24	30WF24	24WF68	24WF68	24WF76	24WF76	24WF76	24WF76	24WF68	24WF45	24WF45	24WF45	24WF45
12 Tower B		24WF10	24WF10	24WF10	24WF10	24WF68	24WF68	30WF24	30WF24	30WF24	24WF68	24WF68	24WF76	24WF76	24WF76	24WF76	24WF68	24WF20	24WF20	24WF20	24WF20

* 13-40 Tower B

See D-AB4-2 for typical details.



DESIGNED

DRAWN

J. Adams

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W. Brewer

D-AB4-4

SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

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PROJECT

THE WORLD TRADE CENTER

TITLE

CORE TRUSS SEAT PLATE THICKNESS SCHEDULE

DATE

3-18-69

REVISIONS

Exterior Floor Col. No.	417	419	421	423	425	427	429	431	433	435	437	439	441	443						
*10-33	34	38	38	38	38	38	38	38	38	38	38	38	38	34						
34	34	38	38	38	38	38	1/2	1/2	1/2	1/2	1/2	38	38	34						
35-40	34	38	38	38	38	38	38	38	38	38	38	38	38	34						
44	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
45-46	-	-	-	-	38	38	38	38	38	38	38	38	38	34						
47	-	-	-	-	1/2	1/2	38	38	38	38	38	38	38	34						
48-49	-	-	-	-	38	38	38	38	38	38	38	38	38	34						
50-68	34	38	38	38	38	38	38	38	38	38	38	38	38	34						
69	34	38	38	38	38	38	1/2	1/2	1/2	1/2	1/2	38	38	34						
70-74	34	38	38	38	38	38	38	38	38	38	38	38	38	34						
78	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
79-80	34	38	38	38	38	38	38	38	38	38	38	-	-	-						
81	34	38	38	38	38	38	38	38	38	1/2	1/2	-	-	-						
82-83	34	38	38	38	38	38	38	38	38	38	38	-	-	-						
84-94	34	38	38	38	38	38	38	38	38	38	38	38	38	34						
95	34	38	38	1/2	1/2	1/2	1/2	1/2	38	38	38	38	38	34						
96-106	34	38	38	38	38	38	38	38	38	38	38	38	38	34						
10 Tower B	24I100	24I100	24I100	24I100	24I100	24I100	24I79.9	24I79.9	24I100	24I100	24I100	24I100	24I100	24I100						
11 Tower B	24I79.9	24I79.9	24I79.9	24I79.9	24I79.9	24I79.9	24I79.9	24I79.9	24I79.9	24I79.9	24I79.9	24I79.9	24I79.9	24I79.9						
12 Tower B	24I100	24I100	24I100	24I100	24I100	24I100	24I79.9	24I79.9	24I100	24I100	24I100	24I100	24I100	24I100						

* 13-33 Tower B

See D-AB4-2 for typical details



DESIGNED

DRAWN

J. Adams

REVIEWED

W. Brewer

D-AB4-5